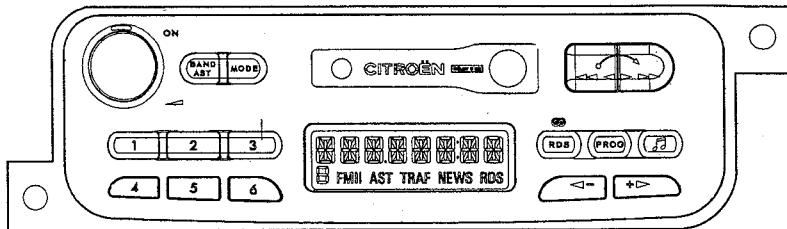


Service Service Service

22RC465/ 35S



For repair information of the Cassette deck, see Service Manual supplement No 4822 725 25459 of Auto Cassette Deck LCA5.2 for RC465/35 LCA5.4 for RC465/35S

Service Manual

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4822 725 25853



TECHNICAL DATA

GENERAL

Power supply	: 10 to 16V DC
Dimensions	: 180x160x51 mm
Front	: Integrated
Security code	: Yes
On/Off logic	: Yes
CD changer control	: Yes for /35S
Blinking LED	: Yes
Quiescent current (at 13.5V)	: <1.5mA + 1mA (blinking)

RADIO

LW	: 144-288 KHz - steps Manual : 1 KHz
MW (Europe)	: 531-1602 KHz - steps Manual / Search : 1 / 9 KHz
FM (x3)	: 87.5-108 MHz - steps Manual / Search : 50 / 50 KHz
IF-AM (1/2)	: 10.7 MHz / 450 KHz
IF-FM (1/2)	: 72.2 MHz / 10.7 MHz
Sensitivity 26dB S/N	: 40 μ V (LW) (limit) : 50 μ V (MW) (limit) : 3.5 μ V (FM) (limit)
Limitation α -3dB	: 7 3 μ V

AMPLIFIER

Output power	: RC465/35S	: 4x19W / 4Ω (THD = 10%)
	: RC465/35	: 4X7W / 4Ω (THD = 10%)
Treble control	: +10 / -10dB	2 at 10kHz
Bass control	: +13/-10dB	2 at 80Hz
Balance control	: 60dB	
Fader	: 60dB	

CASSETTE

CASSETTE	
LCA5.2 for RC465/35	
LCA5.4 for RC465/35S	
Number of tracks	: 2x2
Tape speed	: 4.76 cm/sec
Wow and flutter	: < 0.25%
Crosstalk	: > 30dB

ESD

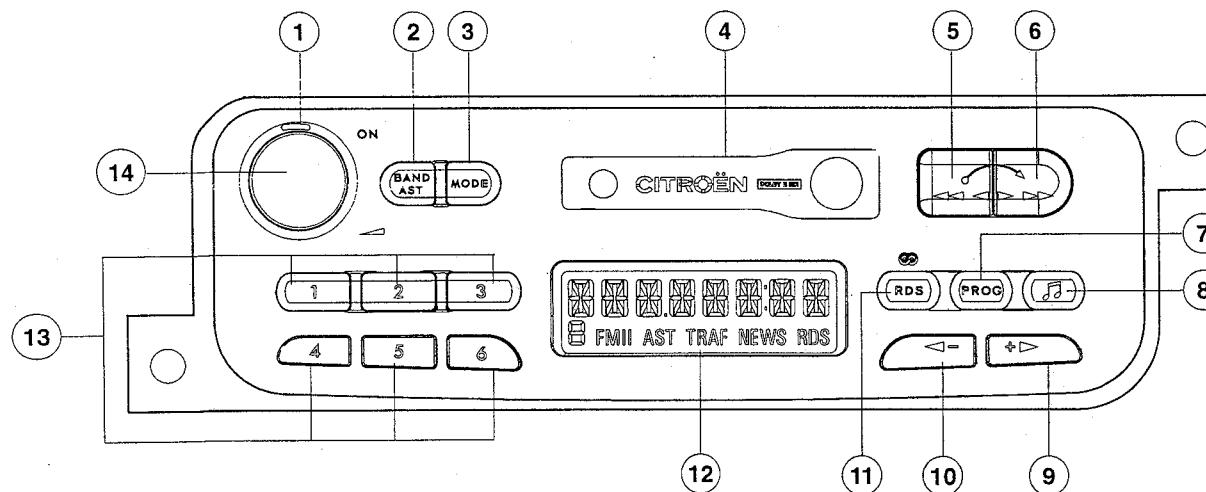


WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD equipment available in Service:

Front controls



1	Blinking led / pilot light	9	Search up / menu up / track up*
2	Button band / autostore	10	Search down / menu down / track down
3	Button mode cassette / radio / CD*	11	Button menu RDS
4	Cassette opening	12	Display
5	Button FRW	13	Preset 1 2 3 4 5 6 / disk* 1 2 3 4 5 6
6	Button FFW	14	On / off / volume
5+6	Eject cassette / reverse cassette		
7	Button menu program		* : RC465/35S only
8	Button menu radio		

Remote control

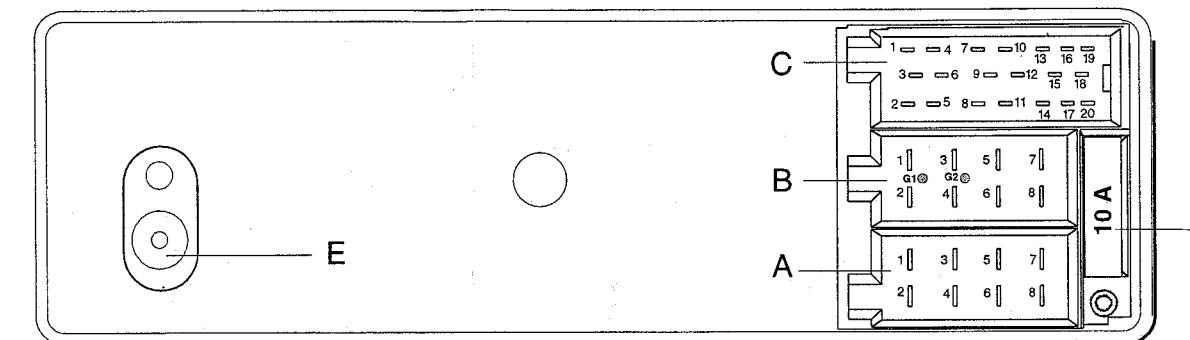
This set can be also controlled by a remote control, allowing you to carry out some of the main functions of the set. This remote control is integrated in the driving wheel of the car, for that reason you cannot get one. If you want to perform some tests using the remote control, you must build it up yourself, using the schematic diagram:

Controls:

- U - direct to A2 =  -
- V - 120Ω to A2 =  
- W - 340Ω to A2 = Memo +
- S - 1020Ω to A2 = Memo -
- X - direct to A3 = Mode
- Y - 120Ω to A3 = Volume -
- Z - 340Ω to A3 = Volume +
- T - 1020Ω to A3 = Mute

PCS 88 683

Connections



A : Power supply and remote control

- A1 Telephone mute
- A2 Remote Control 1
- A3 Remote Control 2
- A4 Power supply permanent
- A5 Power supply (switched output internally switched)
- A6 Illumination (input)
- A7 Ignition key (no power)
- A8 Power ground & remote control ground

B : Loudspeaker outputs

- B1 Rear right +
- B2 Rear right -
- B3 Front right +
- B4 Front right -
- B5 Front left +
- B6 Front left -
- B7 Rear left +
- B8 Rear left -

C : For RC465/35S only: CD changer connections

C1 to NC
 C12
 C13 Bus CDC+
 C14 Bus CDC-
 C15 Ground CDC
 C16 Permanent Supply (output)
 C17 Power supply switched
 C18 CD line in reference
 C19 CD line in left
 C20 CD line in right

E Aerial plug Slide In

F Fuse 10A

Check and Alignment

For all measurements, please refer to the manual "General Check & Alignment procedures for Car Systems" 4822 725 25456, unless otherwise stated.

Current and voltage

A7 = Acc and A4 = Power / Perm

1) SET OFF

	Voltage for + Perm supply	Current +Acc ON	Current +Acc OFF	Supply μ P pin 14 7513	V_LOW μ P pin 34 7513
Acc Supply	A4 = 13.5V	< 1.5mA	< 2.5mA	min 4.5V max 5.2V	min 2V max 5.3V

2) SET ON (A6 not connected)

Reset pin 30	Supply μ P pin 14 7513	V_LOW pin 34 7513	5V pin3 L7805 ABV	8.5V pin 3 L4885CV	V EEeprom
max 0.8V	min 4.5	max 5.2	min 2	max 5.3	min 4.8 max 5.2

Reference oscillator frequencies (to be measured via a X10 probe)

device	MSM 6307	83CE560	HEF4521	SAA7701	HEF4528
pin	24 & 25	51 & 52	4 & 6	63 & 64	9
frequency	6 MHz 0.5%	16 MHz 0.5%	4.194304 MHz 20 ppm	36.860 MHz 60 ppm	1 Hz 20%

Checks:

1) FM

FM mute	98 MHz 1mV	output at load resistor R & L = 775 mV = REF
	no signal	output should be < -24 dB (REF - 24 dB)

Demodulated FM level	98 MHz	215 mV 2dB
	Input	MPX Output of IC96 (pin 10)

Limiting point α -3dB	FM 98MHz	1mV 400Hz	6 μ V	4 μ V	9 μ V
	RANGE	INPUT	NOMINAL	MIN	MAX

Search levels	Input	Dx: 8 μ V < X < 25 μ V
	98 MHz	Local : 100 μ V < X < 326 μ V

2) AM

Demodulated AM level	1053KHz - m=30% - 1KHz	230 mV 2dB
	Input	Audio output of IC96 (pin 19)

Sensitivity at 26dB S/N	162/216/252KHz	m = 30%	1000Hz	< 38 μ V
	603/999/1395KHz			< 30 μ V

Search levels	Input	Dx: 6 μ V < X < 31 μ V
	999KHz	Local : 100 μ V < X < 562 μ V

No alignment is needed for the radio part. The tuner module IC96 is pre-aligned in the factory. Dolby alignment, crosstalk alignment and FM DC level curve learning procedure are performed via a special equipment and software, not yet available in Service.

Some values are stored in the EEeprom.

The EEeprom available in service will contain mean values, that could affect slightly the performance of the set. It is the only solution until further notice. The service code of this EEeprom will be given in a next Service Newsletter.

If you change the tuner module, change also the EEeprom.

Deck part

Use test cassette SBC420 4822 397 30071 unless otherwise stated.

Tape speed and flutter: Use 3.15KHz test tone	Supply voltage	Tape speed	Flutter
	10.8 - 15.6 V	4.76cm/s +3/-2%	< 0.3%

Crosstalk : use 1KHz 0dB crosstalk signal	< -30dB at speakers output R & L
---	----------------------------------

DESCRIPTION OF THE CAR DIGITAL SIGNAL PROCESSOR (CDSP) SAA7701

The CDSP chip can perform all the signal functions in front of the power amplifier and behind the AM and FM demodulation and tape input. These functions are: interference absorption, stereo decoding, RDS decoding, weak signal processing (soft-mute, sliding stereo, etc...), Dolby-B tape noise reduction and the audio volume controls (volume, balance, fader, tone, dynamic compression). Some functions have been implemented in hardware and are not freely programmable. Digital audio signals from external sources with I2S format are accepted. There are four independent analog output channels. This enables separate tone and equalisation control for front and rear speakers.

The DSP can contain a basic program which enables already a set with AM/FM reception, sophisticated FM weak signal functions, MSS, Dolby-B tape noise reduction system, CD play with compressor function, separate bass and treble tone control and fader/balance control.

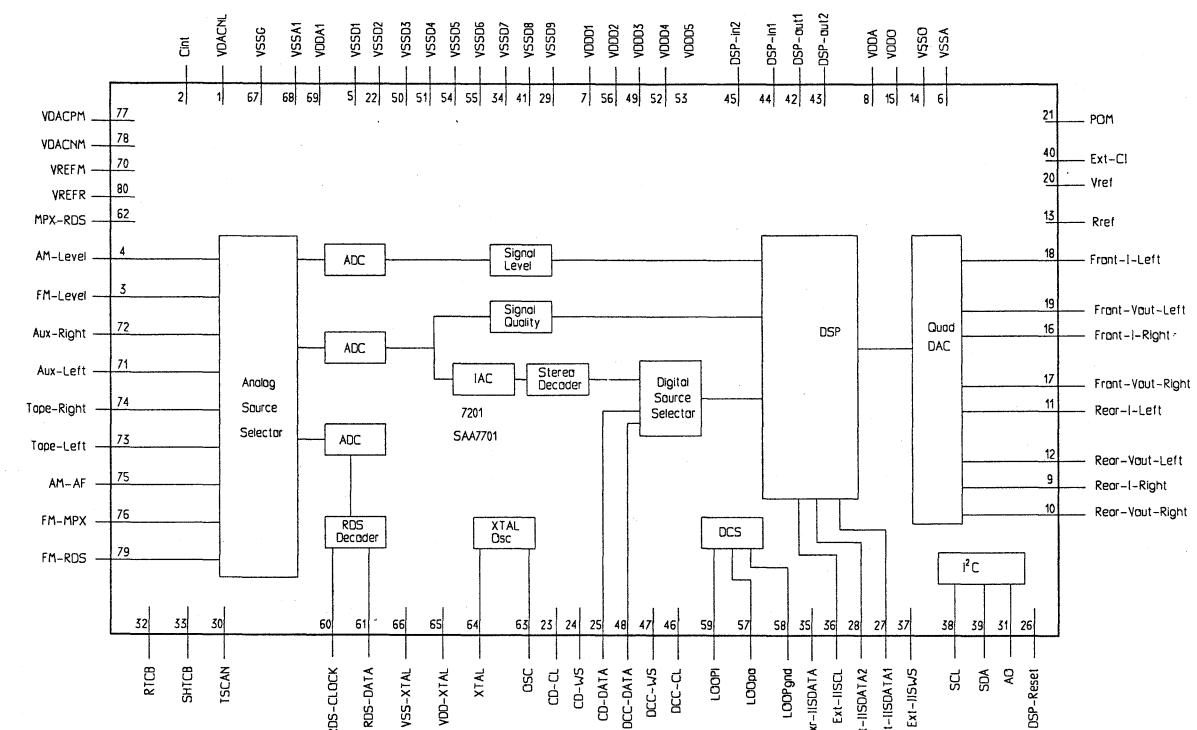
Hardware features

- Bit stream 3rd order Sigma-Delta A/D converters with anti aliasing broadband input filters
- D/A converters with four over sampling and noise shaping
- Digital stereo decoder
- Improved, digital IAC
- RDS processing with optional 16 bit buffer via separate channel (two tuner radio possible)
- Auxiliary analog CD input (CD-walkman, speech, economic CD-changer etc...)
- Two separate full I2S CD and DCC high performance interfaces
- Expandable with additional DSPs for sophisticated features through an I2S gateway
- Audio output short circuit protected
- I2C bus controlled
- Analog tape input
- -40 to +85° C operating temperature range

Software features

- Improved FM weak signal processing with more stereo
- Integrated 19KHz MPX filter and de-emphasis
- Electronic adjustments: FM/AM level, FM channel separation, Dolby level
- Baseband audio processing (treble/bass/balance/fader/volume)
- Dynamic loudness or bass boost
- Stereo 1 or 3 band parametric equaliser
- Automatic leveller (in combination with microprocessor)
- Tape equalisation (DCC analog playback)
- Music Search detection for tape (MSS)
- Pause detection for RDS updates
- Dolby-B tape noise reduction
- (adjustable) dynamic compressor
- CD/DCC De-emphasis processing
- Signal level, noise and multipath detection for RDS (I2C bus command)
- Hidden mute during RDS updates
- Improved AM reception

BLOCK DIAGRAM

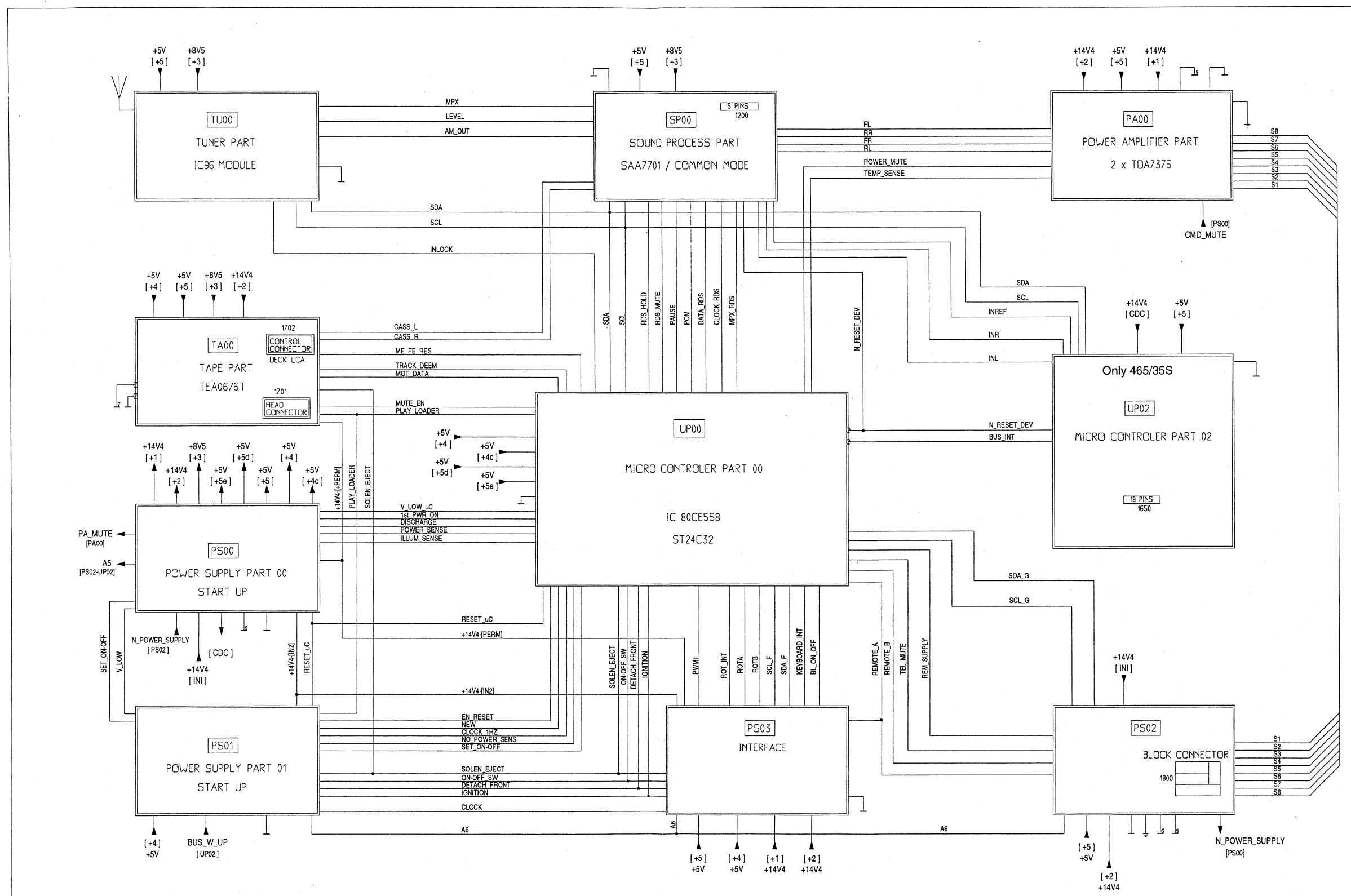


.PINNING OF THE CDSP SAA7701

SYMBOL	PIN	DESCRIPTION
VDACNL	1	Ground Reference Level AD DAC LEVEL
CINT	2	Level AD switch mode integrator connection
FM-level	3	FM-level input pin. Via this pin the level of the received FM-radio signal is fed to the CDSP. The level information is needed for a correct functioning of the weak signal behaviour.
AM-level	4	AM-level input pin. Via this pin the level of the received AM-radio signal is fed to the CDSP.
VSSD1	5	Supply ground 1 digital circuitry DACs
VSSA	6	Supply ground analog circuitry DACs
VDDD1	7	Positive supply 1 digital circuitry DACs
VDDA	8	Positive supply analog circuitry DACs
Rear-I-Right	9	Analog audio current output for Rear-right speaker
Rear-Vout-Right	10	Analog audio voltage output for Rear-right speaker
Rear-I-Left	11	Analog audio current output for Rear-left speaker
Rear-Vout-Left	12	Analog audio voltage output for Rear-left speaker
Rref	13	Input for the internal reference current source of the D/A converter
VSSO	14	Supply ground for output Op-amps DAC
VDD0	15	Positive supply for output Op-amps DAC
Front-I-Right	16	Analog audio current output for Front-right speaker
Front-Vout-Right	17	Analog audio voltage output for Front-right speaker
Front-I-Left	18	Analog audio current output for Front-left speaker
Front-Vout-Left	19	Analog audio voltage output for Front-left speaker
Vref	20	Voltage input for the internal reference buffer amplifier of the D/A converter.
POM	21	Activates the Power On Mute. Timing is determined with an external capacitor.
VSSD2	22	Ground supply 2 digital circuitry
CD-CI	23	I ² S Clock input CD digital audio source. Also reference for 4* asf and asf. Selected if DIV-EXT/INT is not set. / Output LIRS scan chain 6
CD-WS	24	I ² S Word Select Input CD digital audio source / Input LIRS scan chain 6
CD-Data	25	I ² S Left/Right Data Input CD digital audio source / Input LIRS scan chain 1
DSP-reset	26	Input to reset DSP-core (active low) / input LIRS scan chain 3
Ext_IISDATA1	27	I ² S External Input Data channel 1 (front) from extra DSP chip / input CORE scan chain DIO
Ext_IISDATA2	28	I ² S External Input Data channel 2 (rear) for extra DSP chip
VSSD9	29	Ground supply 9 digital circuitry
TSCAN	30	Scan control (active high)
A0	31	Slave sub-address I ² C selection / Serial data input test control block (SITCB)
RTCB	32	Asynchronous Reset test control block (active high)
SHTCB	33	Shift clock test control block (active high)
VSSD7	34	Ground supply 7 digital circuitry
Ext_IISDATA	35	I ² S External Output Data for extra DSP chip / output LIRS scan chain 4; controlled by ENA_IIS (bit 13)
Ext_IISCL	36	I ² S External Output Clock for extra DSP chip / output LIRS scan chain 3; controlled by ENA_IIS (bit 13)
Ext_IISWS	37	I ² S External input/output Word select for extra DSP chip / output CORE scan chain DIO; controlled by ENA_IIS (bit 13)
SCL	38	Serial clock input (I ² C bus) / input LIRS scan chain 4
SDA	39	Serial data input/output (I ² C bus)
EXT-CI	40	External reference clock input to generate 4*asf and ASF synchronisation. To be used in case the I ² S clock inputs are not suitable. Selection if DIV-EXT/INT is set / Latch signal DAC data words in analog test mode.
VSSD8	41	Ground supply 8 digital circuitry
DSP_out1	42	Digital output 1 from DSP-core (F2 of status register) / output CORE scan chain (tri-state for Debug board)
DSP_out2	43	Digital output 2 from DSP-core (F3 of status register) / IAC trigger output / output DAC scan chain 1; actived by AGC_TRIG (bit 15)

SYMBOL	PIN	DESCRIPTION
DSP_in1	44	Digital input 1 for DSP-core (F0 of status register) / input LIRS scan chain 2
DSP_in2	45	Digital input 2 for DSP-core (F1 of status register) / input CORE scan chain
DCC-CI	46	I ² S Clock input DCC digital audio source. Also reference for 4*asf and asf. Selected if DIV-EXT/INT is not set. / Input DAC digital scan chain 1 / input DAC analog scan chain LEFT / input external MPX ADC if SEL-EXT/ADC is set.
DCC-WS	47	I ² S Word Select input DCC digital audio source / input DAC digital scan chain 2 / input DAC analog scan chain RIGHT / input external RDS ADC if SEL-EXT/ADC is set.
DCC-Data	48	I ² S Left/RIGHT Data input DCC digital audio source / output LIRS scan chain 5 / input external LEVEL ADC if SEL-EXT/ADC is set.
VDDD3	49	Positive supply 3 digital circuitry
VSSD3	50	Ground supply 3 digital circuitry
VSSD4	51	Ground supply 4 digital circuitry
VDDD4	52	Positive supply 4 digital circuitry
VDDD5	53	Positive supply 5 digital circuitry
VSSD5	54	Ground supply 5 digital circuitry
VSSD6	55	Ground supply 6 digital circuitry
VDDD2	56	Positive supply 2 digital circuitry
LOOPo	57	Unfiltered DCS clock output / output DAC scan chain 2 / LEVEL A/D bitstream output in analog A/D test mode / bit slicer output in slicer test mode
LOOPgnd	58	Ground connection DCS filter
LOOPi	59	Filtered DCS clock input / Bit slicer input in slicer test mode
RDS-Clock	60	Radio Data System bit clock output / output LIRS scan chain 1 / MPX A/D bitstream output in analog AD test mode / RDS external clock input; controlled by SEL-BUF/BUF (bit 7) / X-tal output in slicer test mode.
RDS-Data	61	Radio Data System data output / output LIRS scan chain 2 / RDS A/D bitstream output in analog AD test mode
MPX-RDS	62	Selects in FM-mode between FM-MPX and RDS-MPX input signal to the MPX decimation filter / input LIRS scan chain 5 / input A/D scan chain in analog test mode
OSC	63	Crystal oscillator output: Drive output to 36.860 MHz crystal or forced input in slave mode
XTAL	64	Crystal oscillator input: local crystal oscillator sense
VDD_XTAL	65	Positive supply X-TAL circuitry
VSS_XTAL	66	Ground supply X-TAL circuitry
VSSG	67	Ground guards ADs
VSSA1	68	Ground supply ADs analog
VDDA1	69	Positive supply ADs analog
VREFM	70	Mid ref voltage MPX AD and buffers
Aux-Left	71	Analog input pin for Auxiliary-Left signal
Aux-Right	72	Analog input pin for Auxiliary-Right signal
Tape-Left	73	Analog input pin for Tape-Left signal
Tape-Right	74	Analog input pin for Tape-Right signal
AM-AF	75	Analog input pin for AM audio frequency
FM-MPX	76	Analog input pin for FM-Multiplex signal
VDACPM	77	Positive reference voltage AD DAC MPX and RDS
VDACNM	78	Ground reference voltage AD DAC MPX and RDS
FM-RDS	79	Analog FM-MPX input pin for RDS decoding
VREFR	80	Mid ref voltage RDS AD, LEVEL AD and buffers

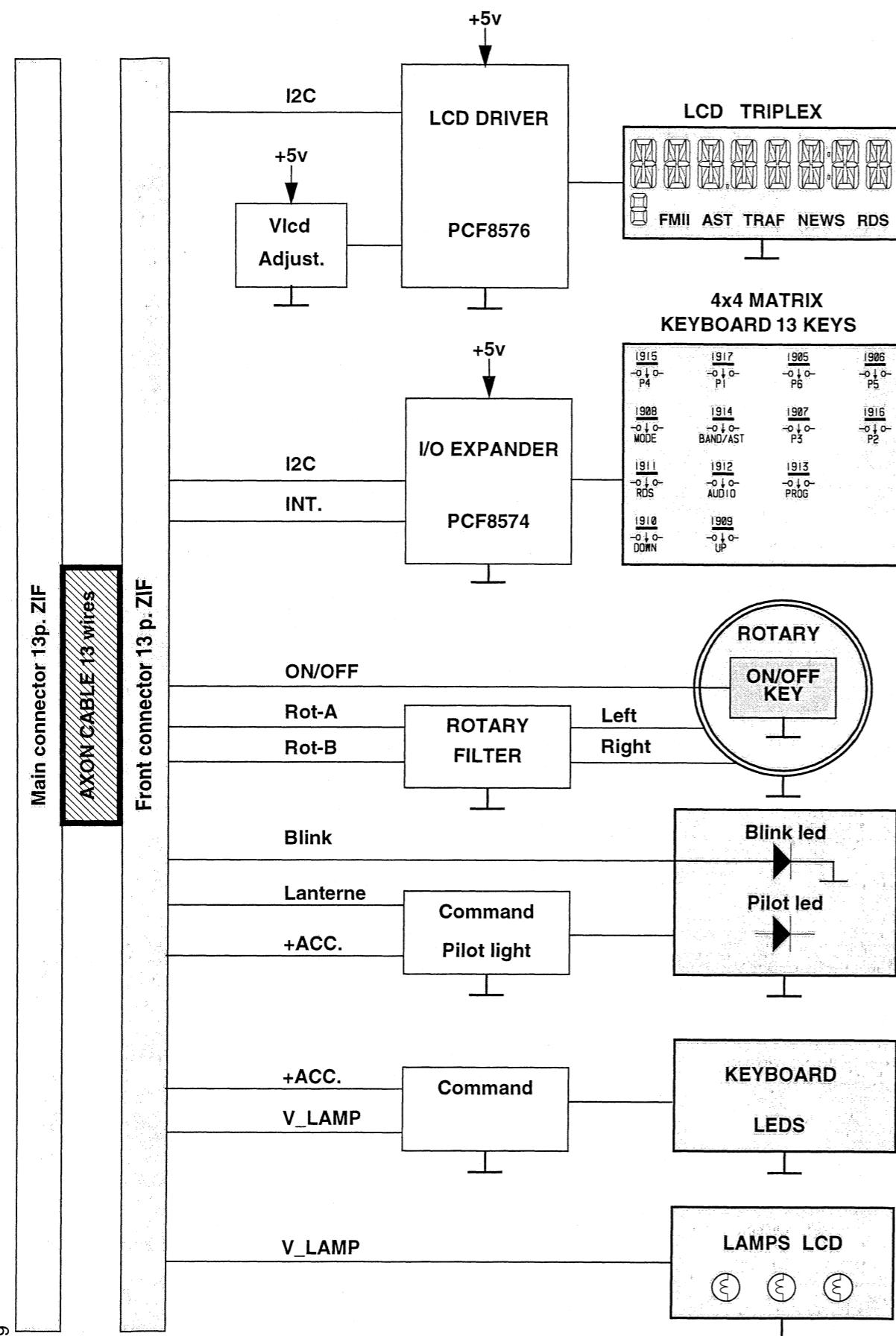
Explanation: LIRS is the abbreviation of the level, IAC, RDS and Stereo decoder part.



ELECTRICAL BLOC DIAGRAM

22RC465/35
22RC465/35S

Front block diagram



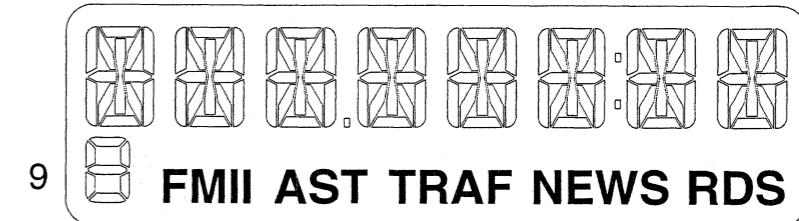
Front illumination

IGNITION	SET	LCD backlighting		Keyboard illumination		Pilot Light		Blinking Led	
		Day	Night	Day	Night	Day	Night	Day	Night
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
ON	ON	OFF	ON (Rhéost)	OFF	ON	OFF	ON	OFF	OFF

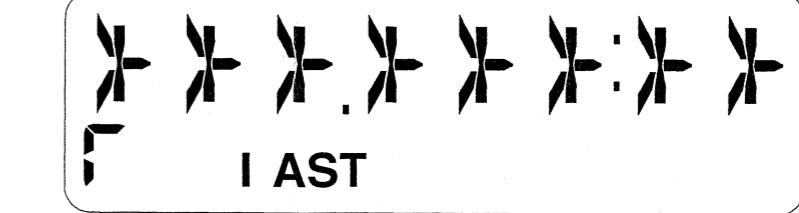
LCD tables

LCD 8 Characters			
Driver	Pin Nb	LCD pinning	LCD
BP0	13	1	COM1
BP2	14	2	COM2
BP1	15	3	COM3
BP3	16	--	--

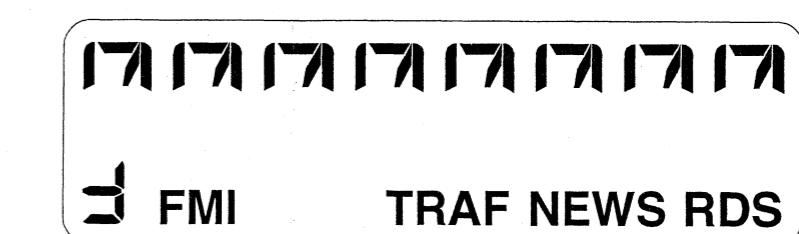
pin1 1 2 3 4 5 6 7 8 pin43



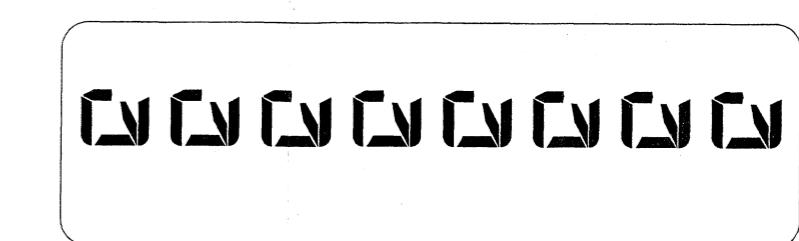
COMMONS



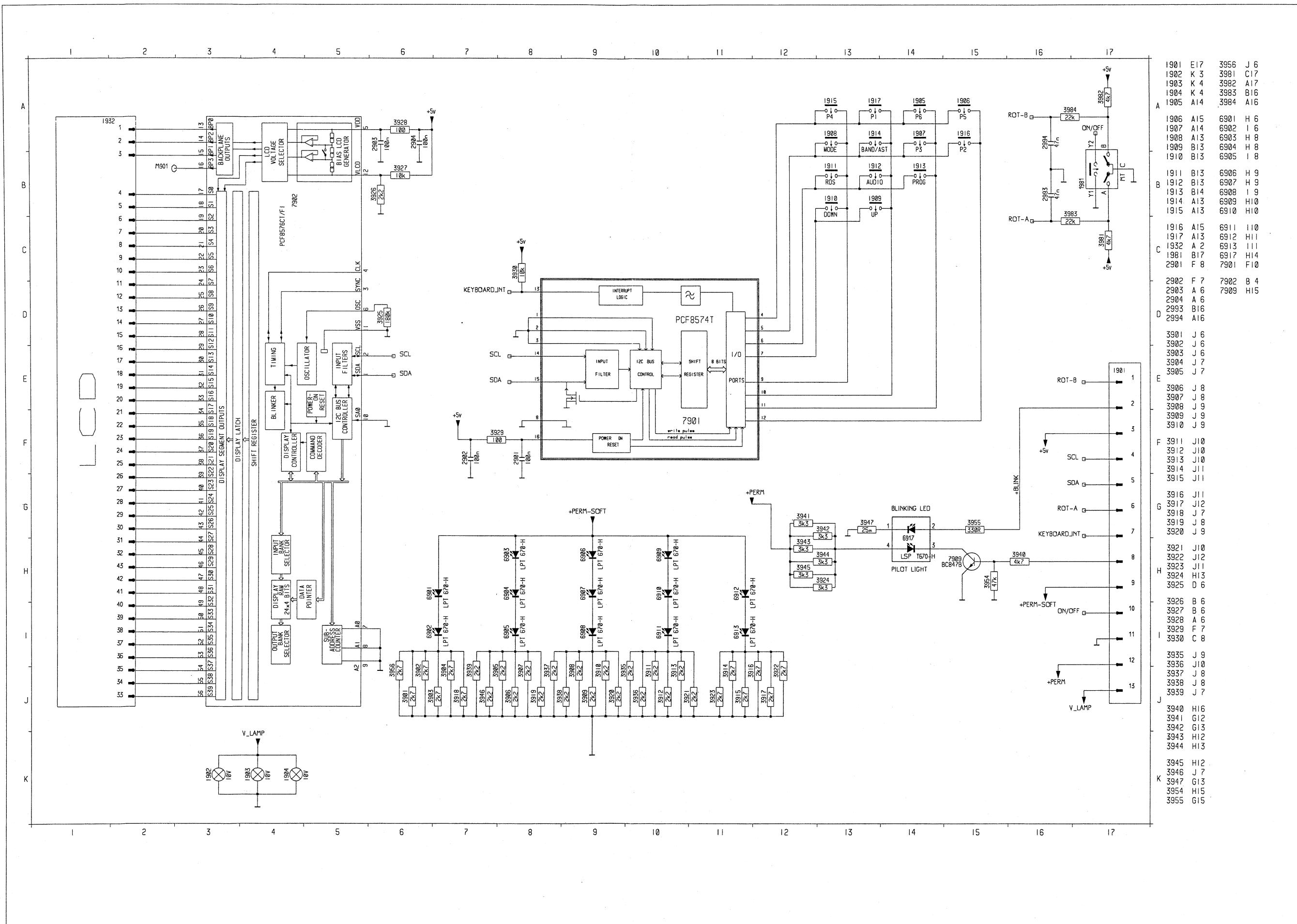
COM1



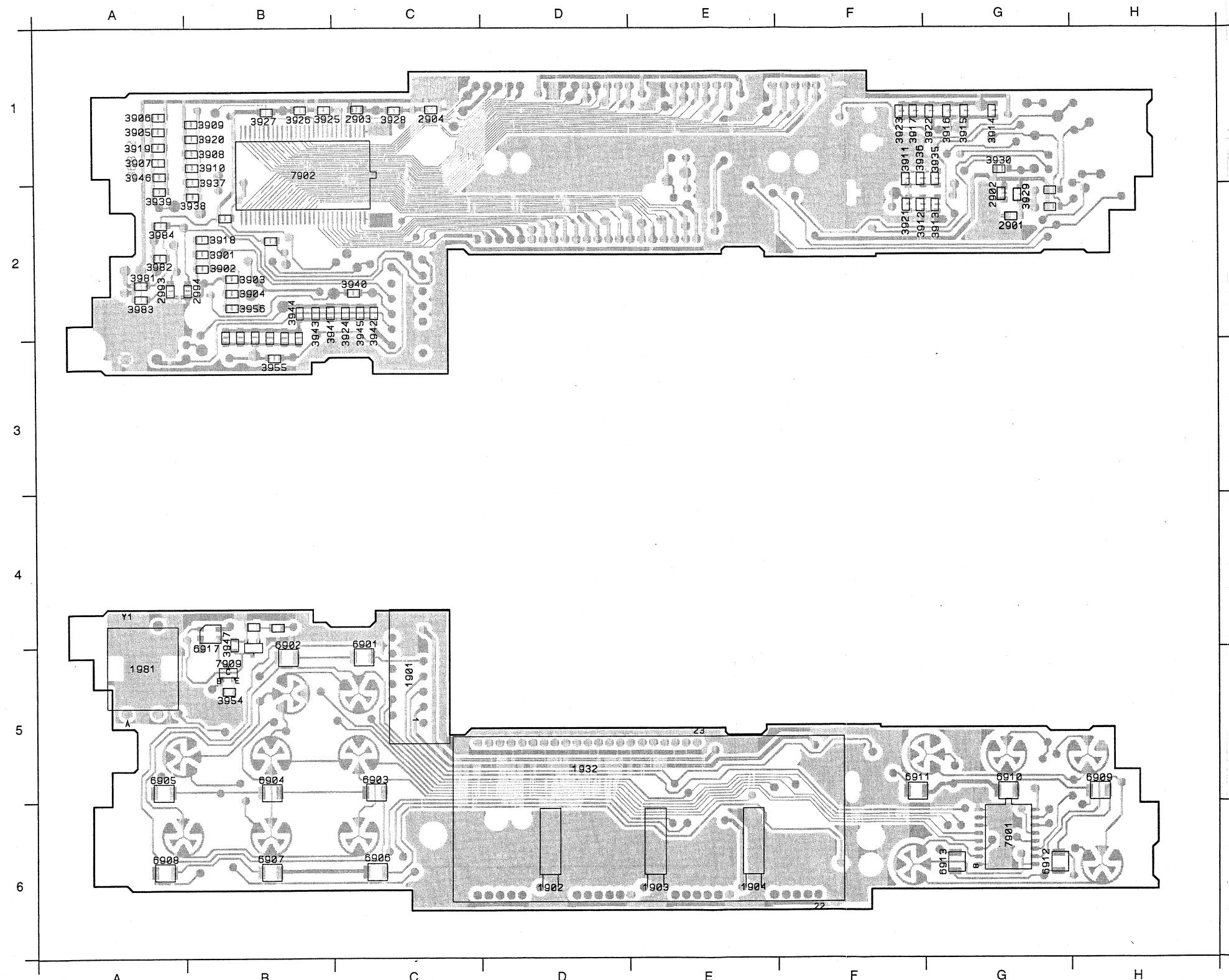
COM3



COM2

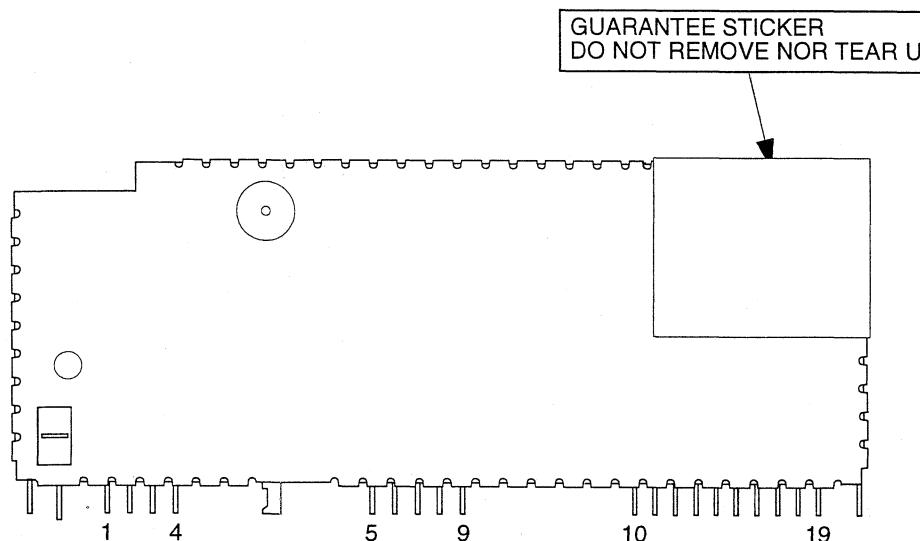


FRONT PWB LAYOUT



IC96 MODULE

Not repairable module. Do not open and do not try to repair yourself!



Connections

1 AM/FM Aerial input	10 Multiplex / RDS output signal
2 Ground	11 Unweighted level output
5 Inlock detector pin	12 I ² C SDA
6 Vcc 8.5V	13 I ² C SCL
7 Ground	14 SDS time constant pin
8 Vcc 5.0V	17 Ground
9 V reference	19 AM audio output

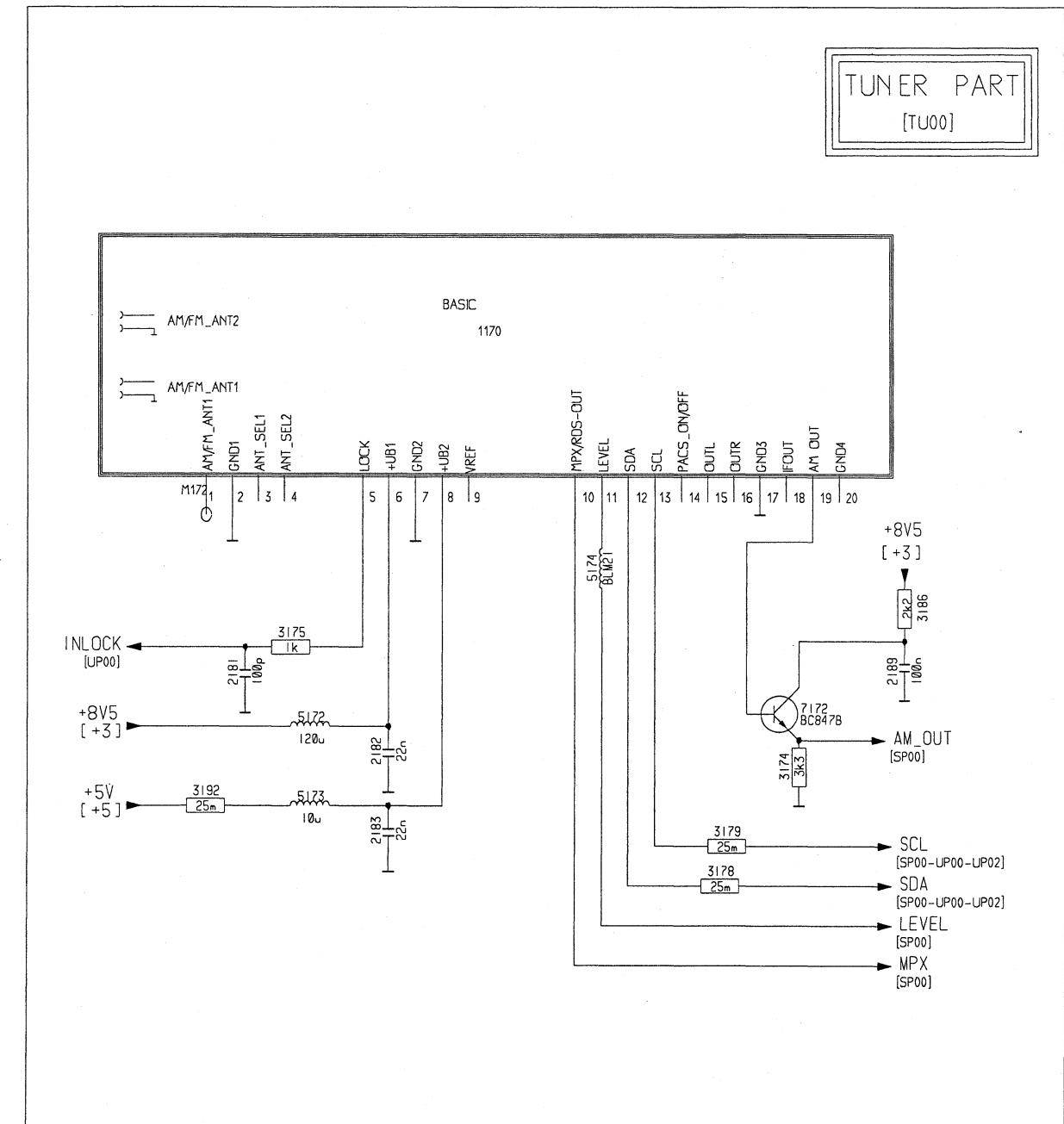
Quick reference data:

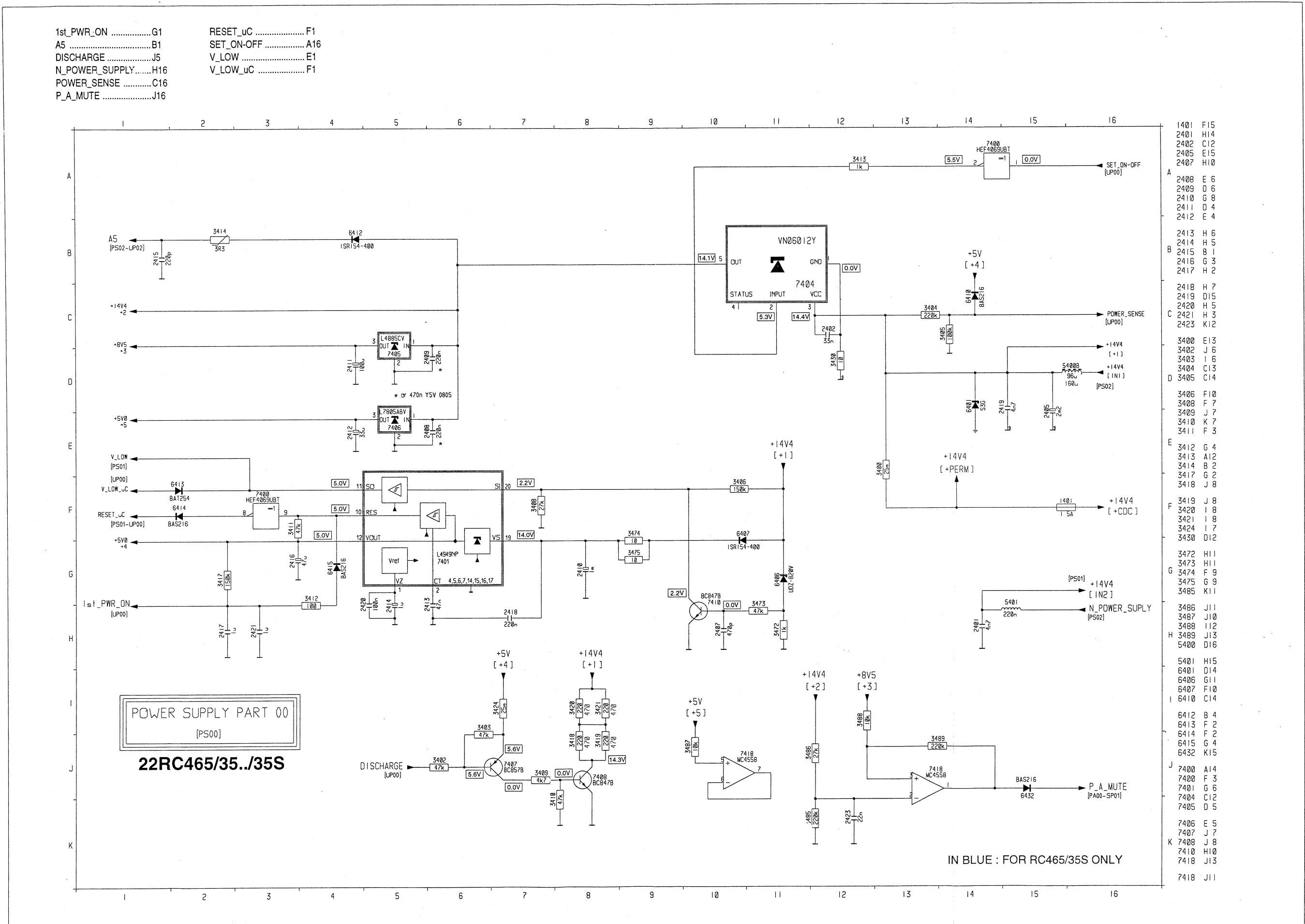
1) AM part

- Longwave/Mediumwave 144-1710 KHz (inclusive USA)
- Shortwave 5850-6250 KHz - 49 meter band
- AM double super concept
- AM IF1 10.7MHz
- AM IF2 450KHz
- First VCO frequency above input signal frequency
- Second X-tal oscillator frequency below IF1
- Usable sensivity $\alpha 26$ dB MW = 14μ V typ.

1) FM part

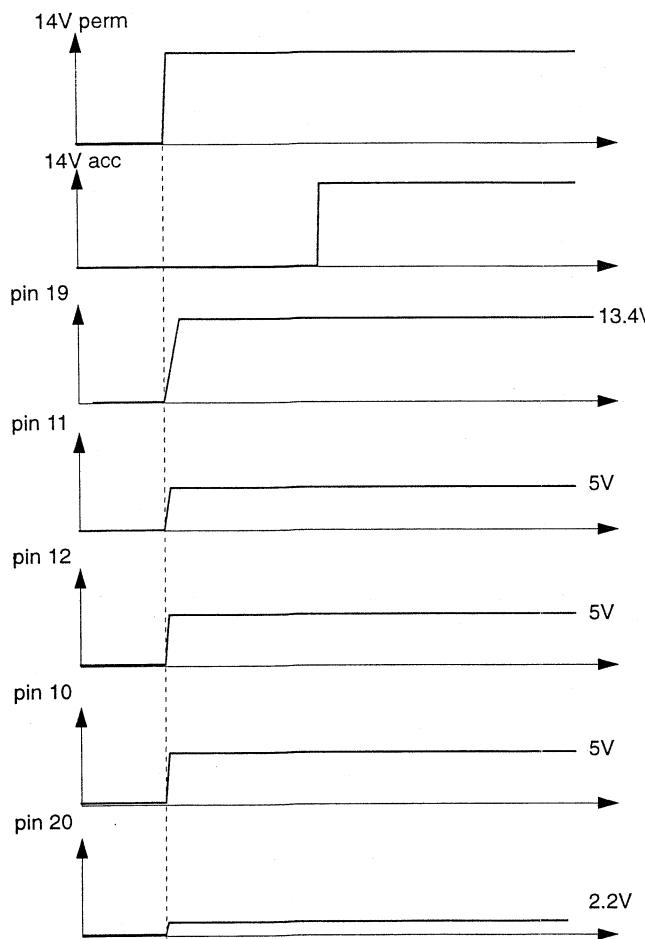
- FM 87.5 - 108MHz
- FM double super concept
- FM IF1 72.2MHz
- FM IF2 10.7MHz
- First VCO frequency above input signal frequency
- Second X-tal oscillator frequency below IF1
- Usable sensivity $\alpha 26$ dB = 2.5μ V typ.
- THD 1mV $\delta f=75$ KHz = 0.5% typ
- Signal to noise ratio = 65dB typ
- Locktime synthesizer <2mSec



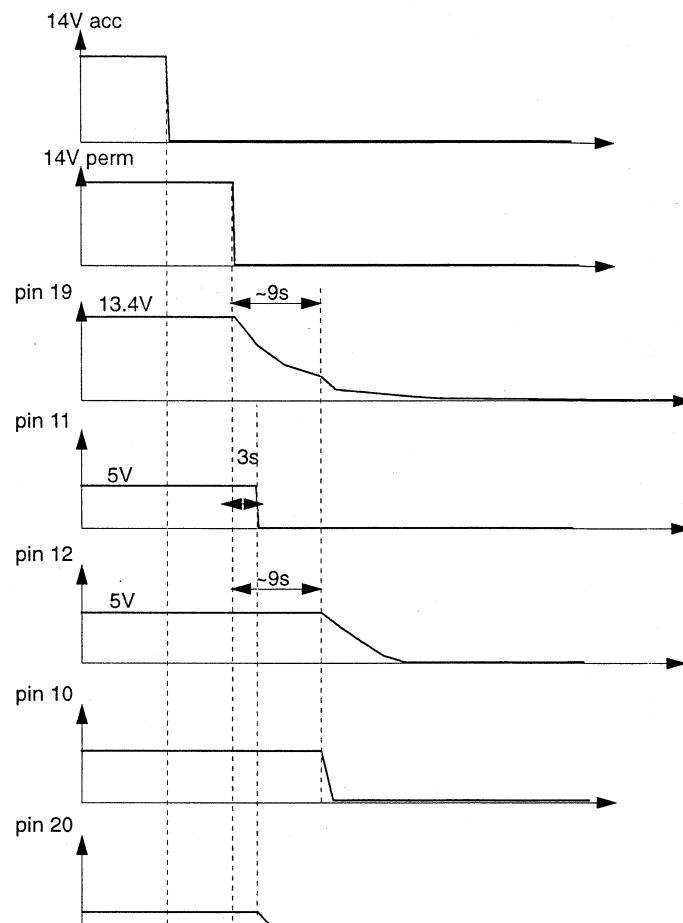


Waveforms on IC 7401 L4949N

1) Set OFF



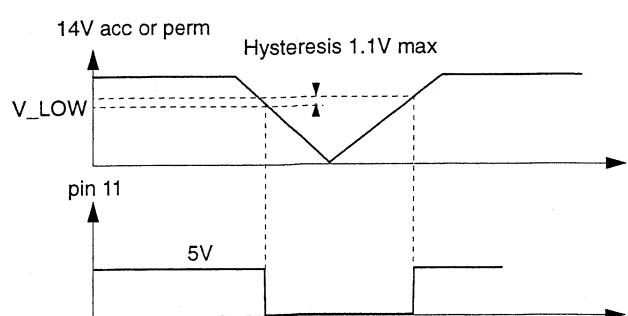
2) Set ON



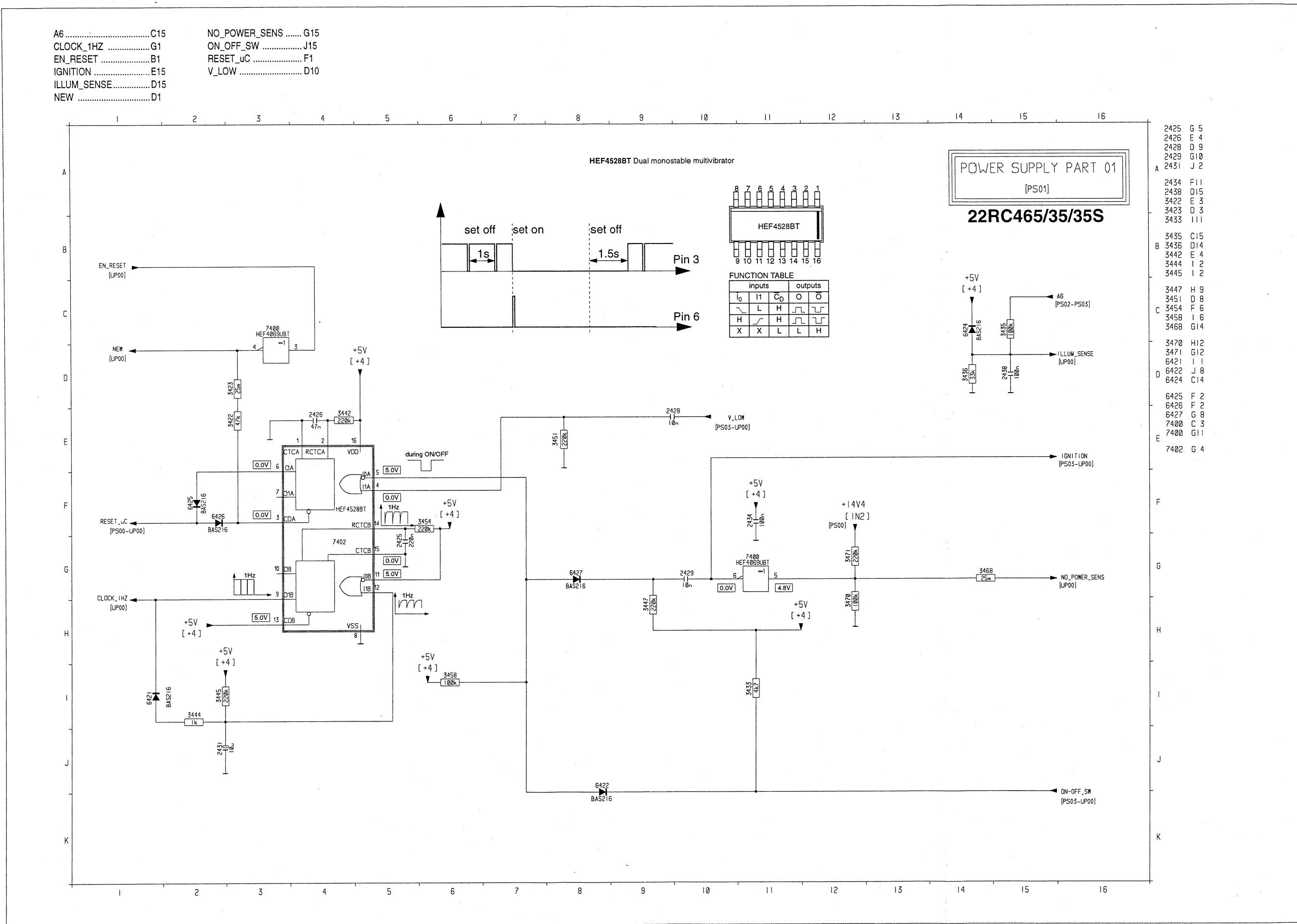
3) V LOW handling

If a V_LOW occurs during set is On or during set On/Off procedure is performed, the micro p. switches Off the set and finishes the write EEPROM activities. After this action the hardware reset generation will be enabled and the micro p. goes to power down.

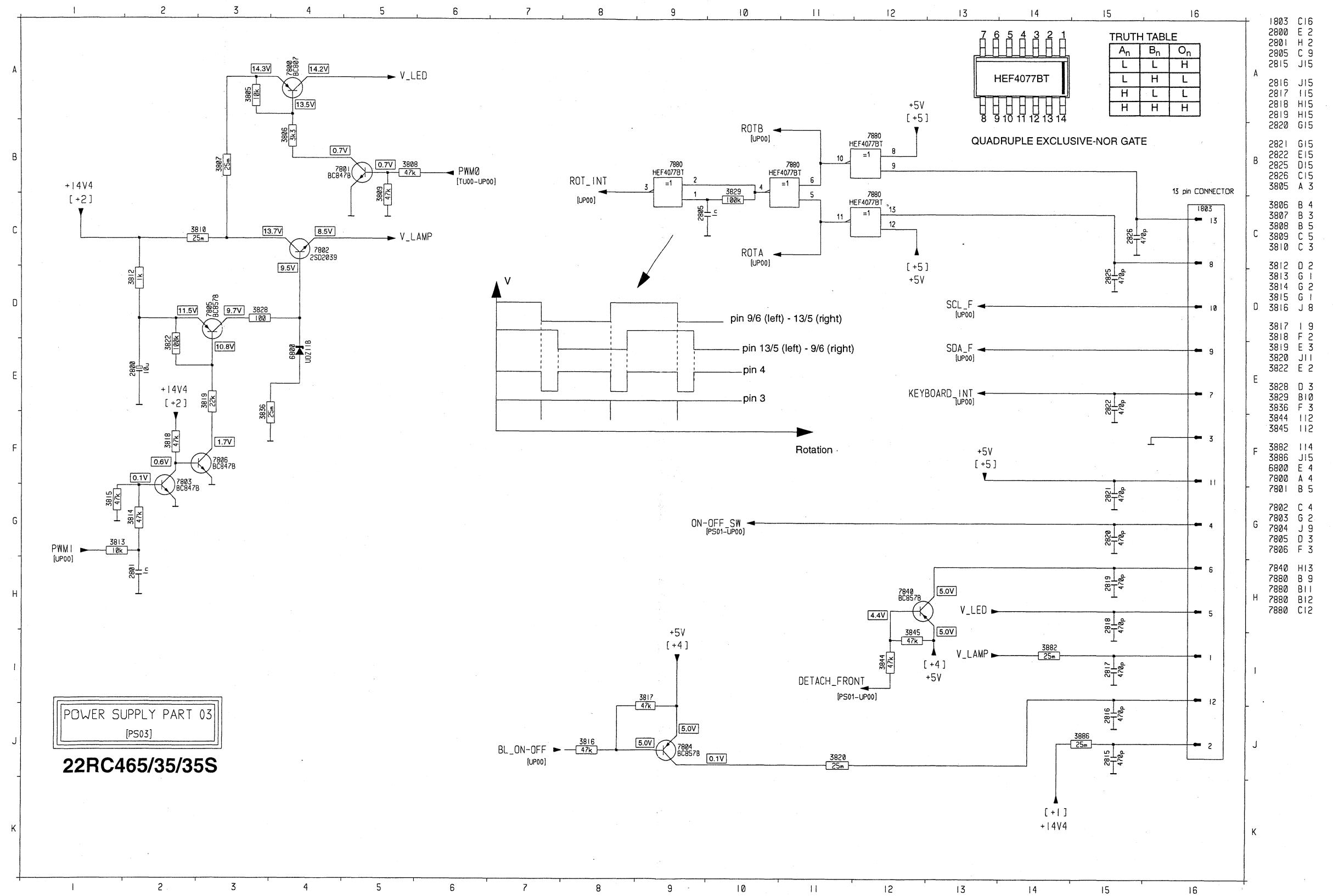
V_LOW handling



Technician's remarks

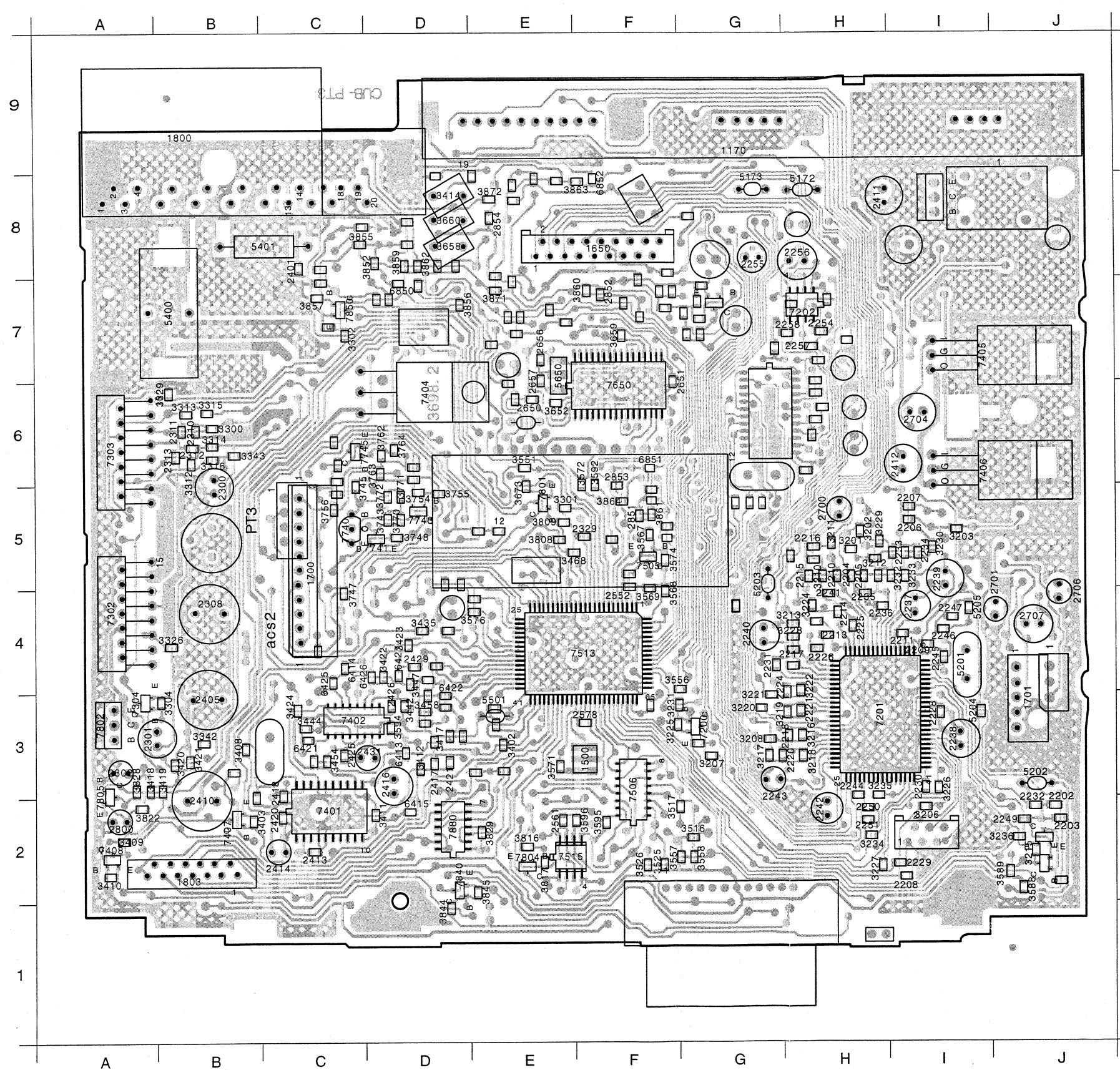


BL_ON-OFF J7
 DETACH_FRONT I12
 KEYBOARD_INT E13
 ON-OFF_SW G10
 PWM1 G1
 ROTA C10
 ROTB B10
 ROT_INT B8
 SCL_F D13
 SDA_F E13
 V_LAMP C5/I13
 V_LED A5/H13

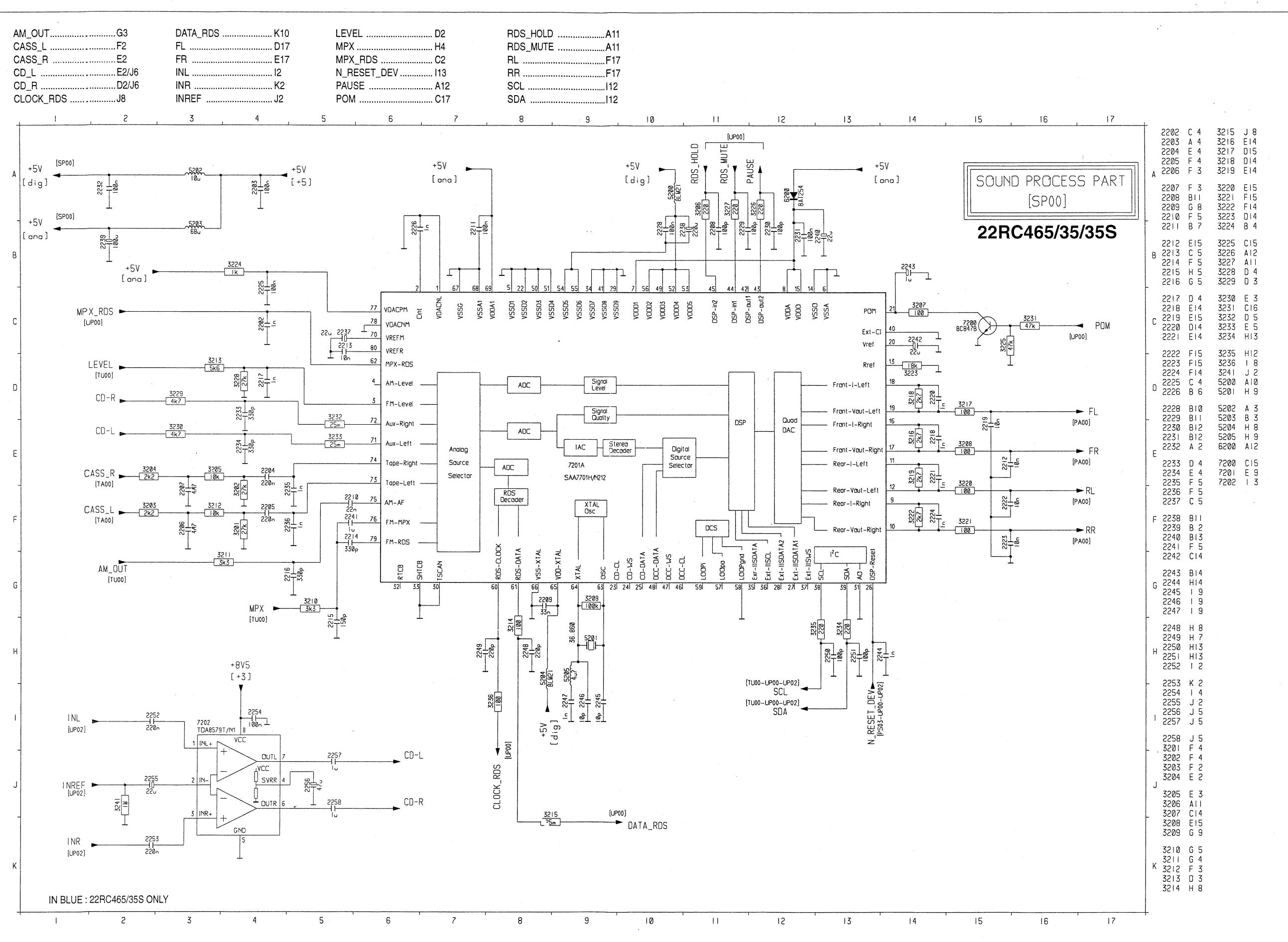


MAIN PWB LAYOUT - TOP SIDE VIEW

22RC465/35 .. /359

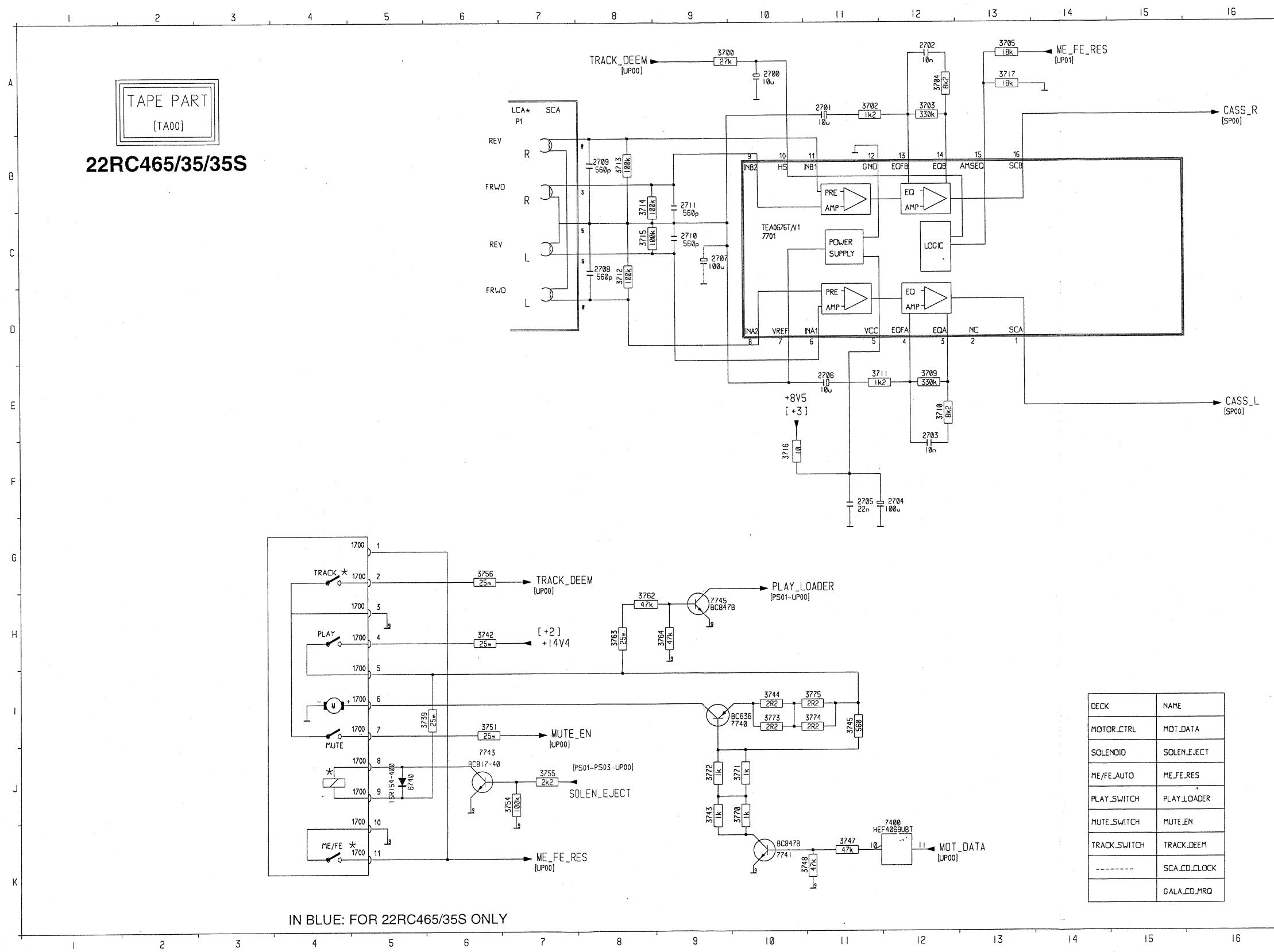


1170	G 8	2425	C 2	3421	B 2	5205	I 4
1500	F 2	2426	D 3	3422	D 3	5400	B 7
1650	F 7	2429	D 3	3423	D 3	5401	C 7
1700	C 4	2431	D 2	3424	C 3	5501	E 3
1701	J 3	2552	F 4	3435	D 3	5650	E 6
1800	B 8	2561	E 2	3442	D 3	6413	D 2
1803	B 1	2578	F 3	3444	C 2	6414	C 3
2202	J 2	2650	E 6	3447	D 3	6415	D 2
2203	J 2	2651	F 6	3454	C 2	6421	C 2
2204	H 4	2656	E 6	3458	D 3	6422	D 3
2205	H 4	2657	E 6	3468	E 4	6425	C 3
2206	I 4	2700	H 5	3516	G 1	6426	D 3
2207	I 5	2701	J 4	3517	F 2	6427	D 3
2208	I 1	2704	I 6	3525	F 1	6850	D 7
2209	I 3	2706	J 4	3526	F 1	6851	F 5
2210	H 4	2707	J 3	3551	E 5	6852	F 8
2211	I 3	2800	A 2	3556	F 3	7200	G 2
2213	H 3	2851	F 5	3557	G 1	7201	H 3
2214	H 4	2852	F 7	3558	G 1	7202	H 7
2215	H 4	2853	F 5	3567	F 4	7302	A 4
2216	H 4	2854	E 7	3568	F 4	7303	A 5
2217	H 3	3201	H 4	3569	F 4	7304	A 3
2218	H 2	3202	H 4	3571	E 2	7401	C 2
2220	G 2	3203	I 4	3572	F 5	7402	C 3
2221	H 3	3206	I 2	3574	F 4	7404	D 6
2224	H 3	3207	G 2	3576	E 4	7405	I 6
2225	H 3	3208	G 2	3588	J 1	7406	I 5
2226	H 3	3210	H 4	3589	J 1	7407	B 2
2228	I 3	3211	H 4	3592	F 5	7408	A 1
2229	I 1	3212	H 4	3594	D 2	7505	F 4
2230	I 2	3213	H 3	3595	F 2	7506	F 2
2231	G 3	3215	J 1	3596	E 2	7513	F 3
2232	J 2	3216	H 2	3652	E 6	7515	E 1
2233	I 4	3217	G 2	3658	D 7	7650	F 6
2234	I 4	3218	H 2	3659	F 6	7740	C 4
2235	H 4	3219	H 3	3660	D 7	7741	D 4
2236	H 4	3220	G 3	3673	E 5	7743	D 5
2237	I 4	3221	G 3	3743	D 4	7745	C 5
2238	I 2	3222	H 3	3745	C 5	7801	E 5
2239	I 4	3224	H 4	3747	C 4	7802	A 3
2240	G 3	3225	F 3	3748	D 4	7804	E 1
2241	H 4	3226	I 2	3754	D 5	7805	A 2
2242	H 2	3227	H 1	3755	D 5	7840	D 1
2243	G 2	3228	H 3	3756	C 5	7850	C 7
2244	H 2	3229	H 4	3762	D 5	7880	D 2
2245	I 3	3230	I 4	3763	D 5		
2246	I 3	3231	F 3	3764	D 5		
2247	I 4	3232	I 4	3770	D 4		
2249	J 2	3233	I 4	3771	D 5		
2250	H 2	3234	H 1	3772	D 5		
2251	H 2	3235	H 2	3808	E 4		
2254	H 6	3236	J 1	3809	E 4		
2255	G 7	3300	B 5	3816	E 1		
2256	H 7	3301	E 5	3817	E 1		
2257	H 6	3302	C 6	3822	A 2		
2258	H 6	3304	B 3	3828	A 2		
2300	B 5	3312	B 5	3829	E 1		
2301	A 2	3313	B 6	3844	D 1		
2302	A 2	3314	B 5	3845	E 1		
2308	B 4	3315	B 6	3852	D 7		
2310	B 5	3316	B 5	3855	C 7		
2311	B 5	3326	B 3	3856	D 7		
2312	B 5	3329	B 6	3857	C 7		
2313	B 5	3342	B 2	3859	D 7		
2329	F 4	3343	B 5	3860	F 7		
2401	C 7	3402	E 2	3861	F 5		
2405	B 3	3403	B 2	3862	D 7		
2410	B 2	3408	B 2	3863	F 8		
2411	H 8	3409	A 1	3864	F 5		
2412	I 5	3410	A 1	3871	E 7		
2413	C 1	3411	D 2	3872	E 8		
2414	C 1	3412	D 2	5172	H 8		
2416	D 2	3414	D 8	5173	G 8		
2417	D 2	3417	D 2	5201	I 3		
2418	C 2	3418	A 2	5202	J 2		
2420	C 2	3419	B 2	5203	G 4		
2421	D 2	3420	B 2	5204	I 3		



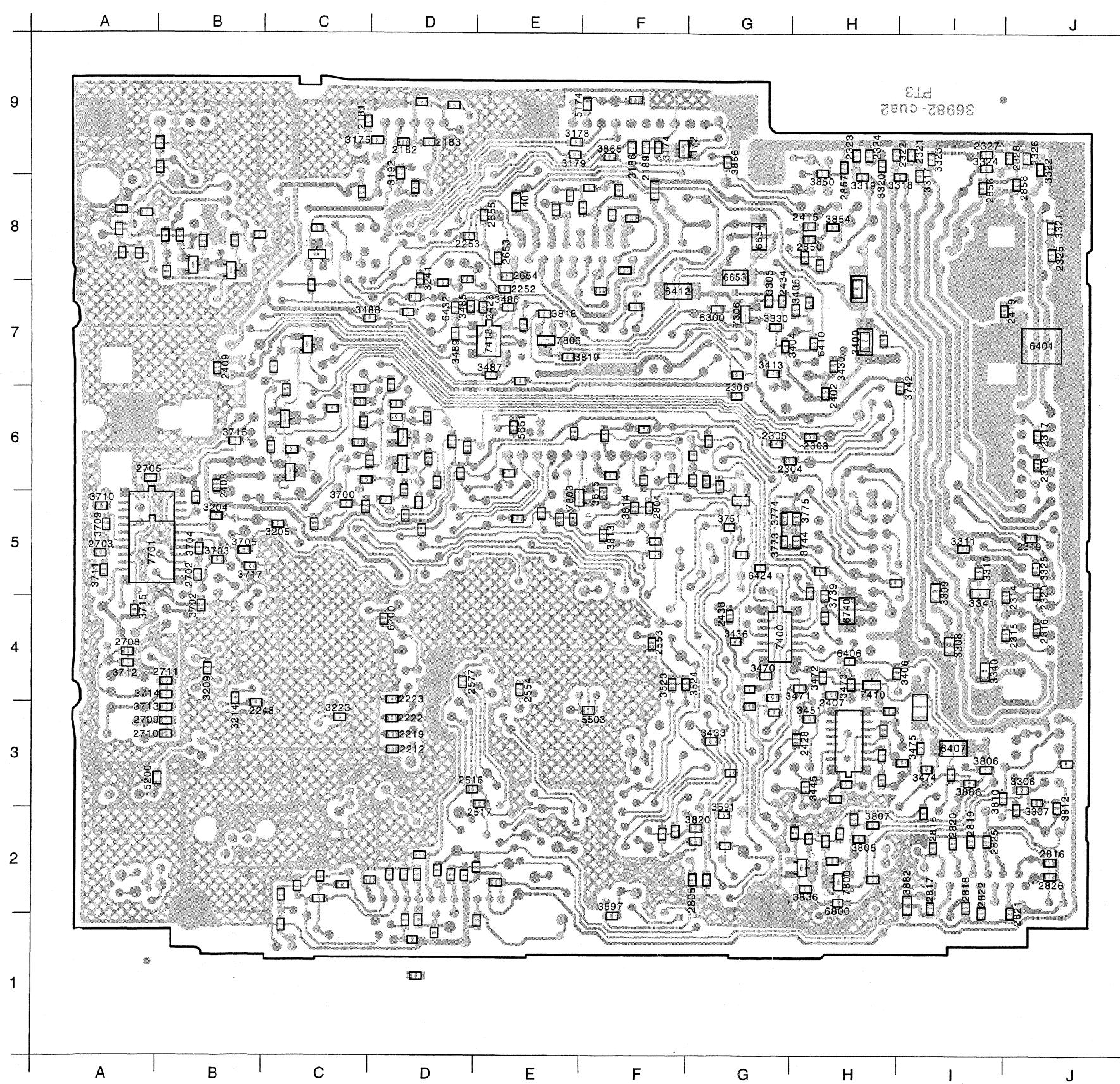
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 CASS_R A16
 ME_FE_RES A14/K7
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 PLAY_LOADER G10
 MOT_DATA K12
 SOLEN_EJECT J7
 TRACK_DEEM A8/G7

22RC465/35/35S

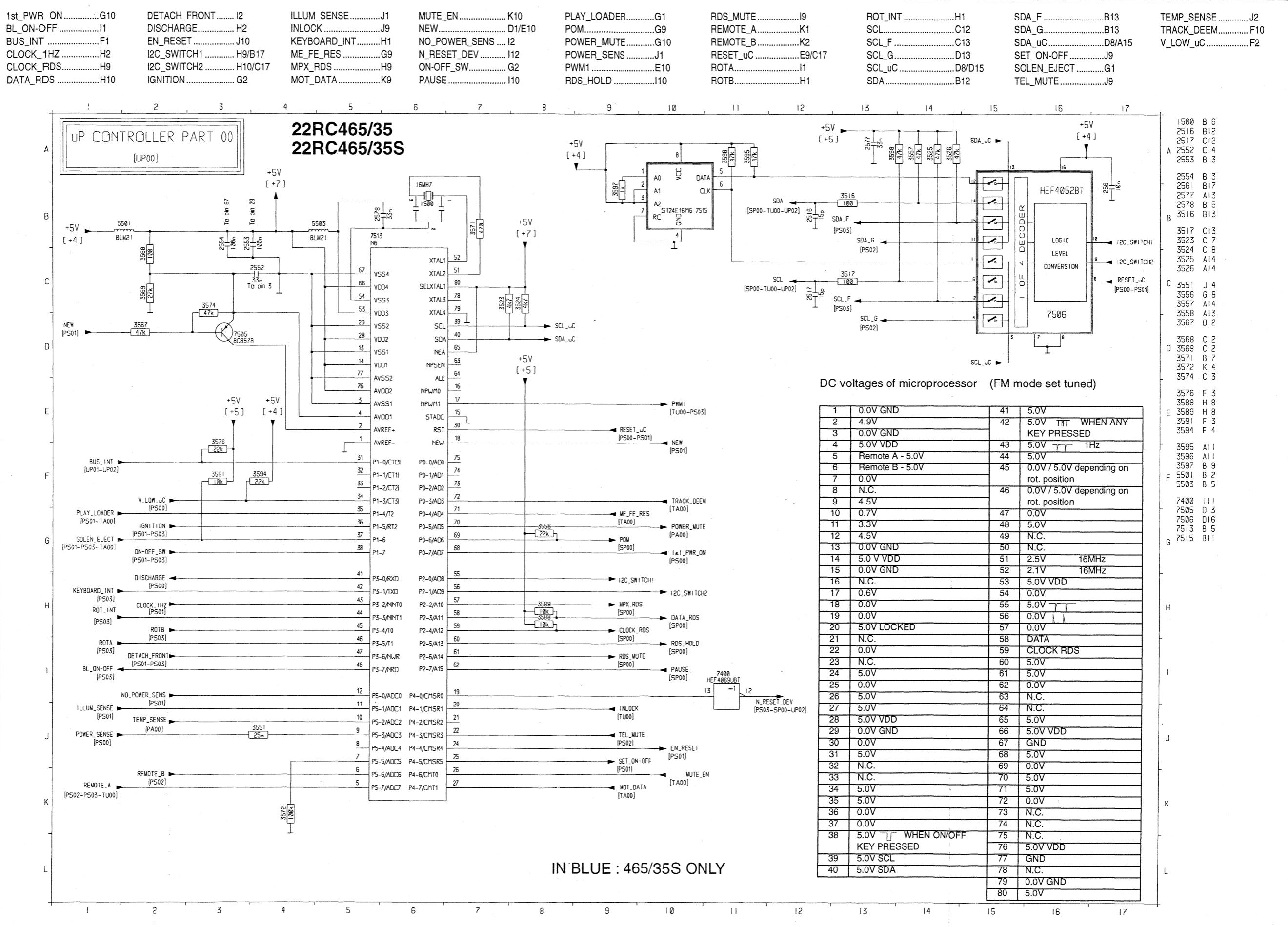


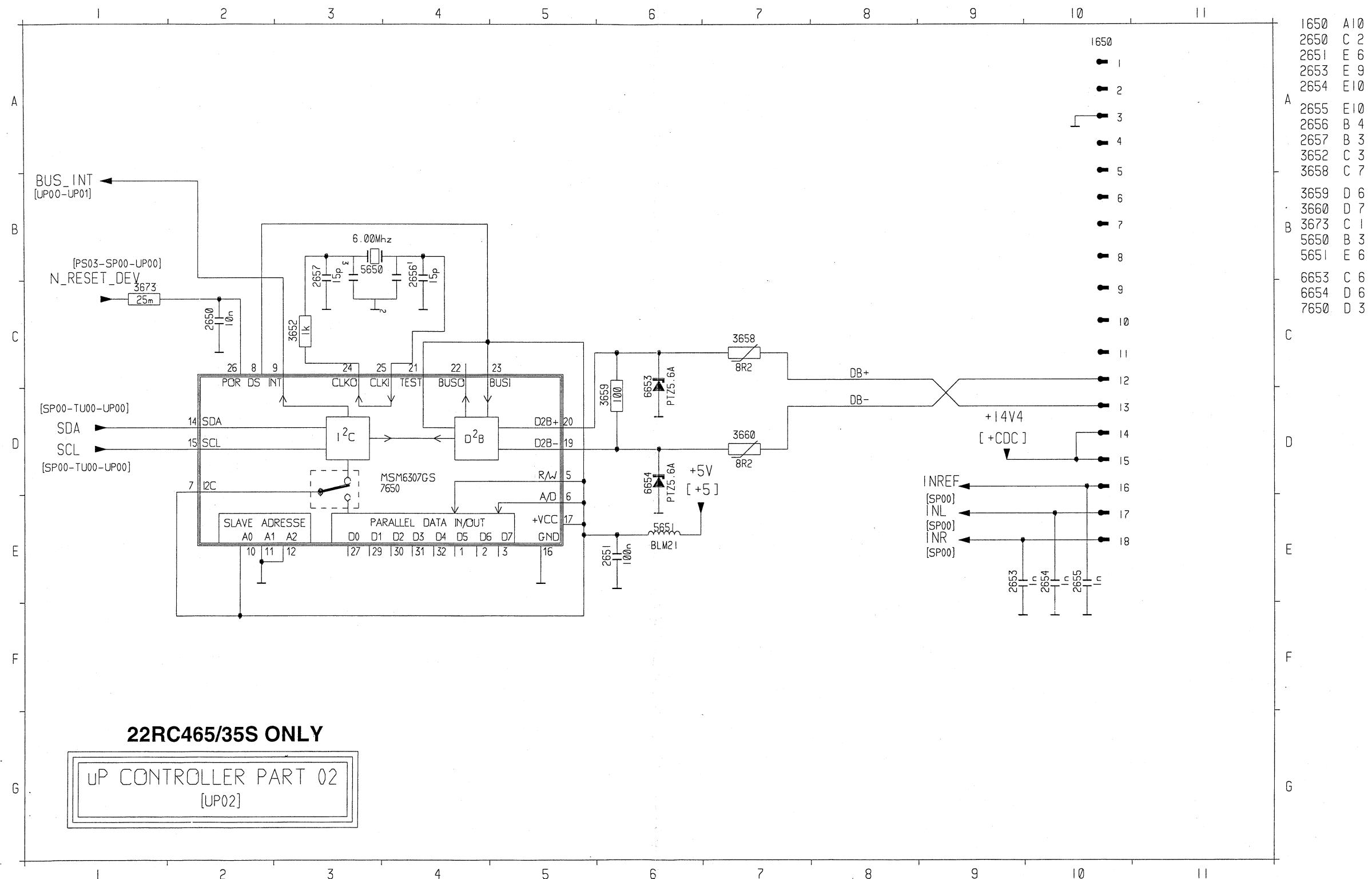
MAIN PWB LAYOUT - BOTTOM SIDE VIEW

22RC465/35../35S

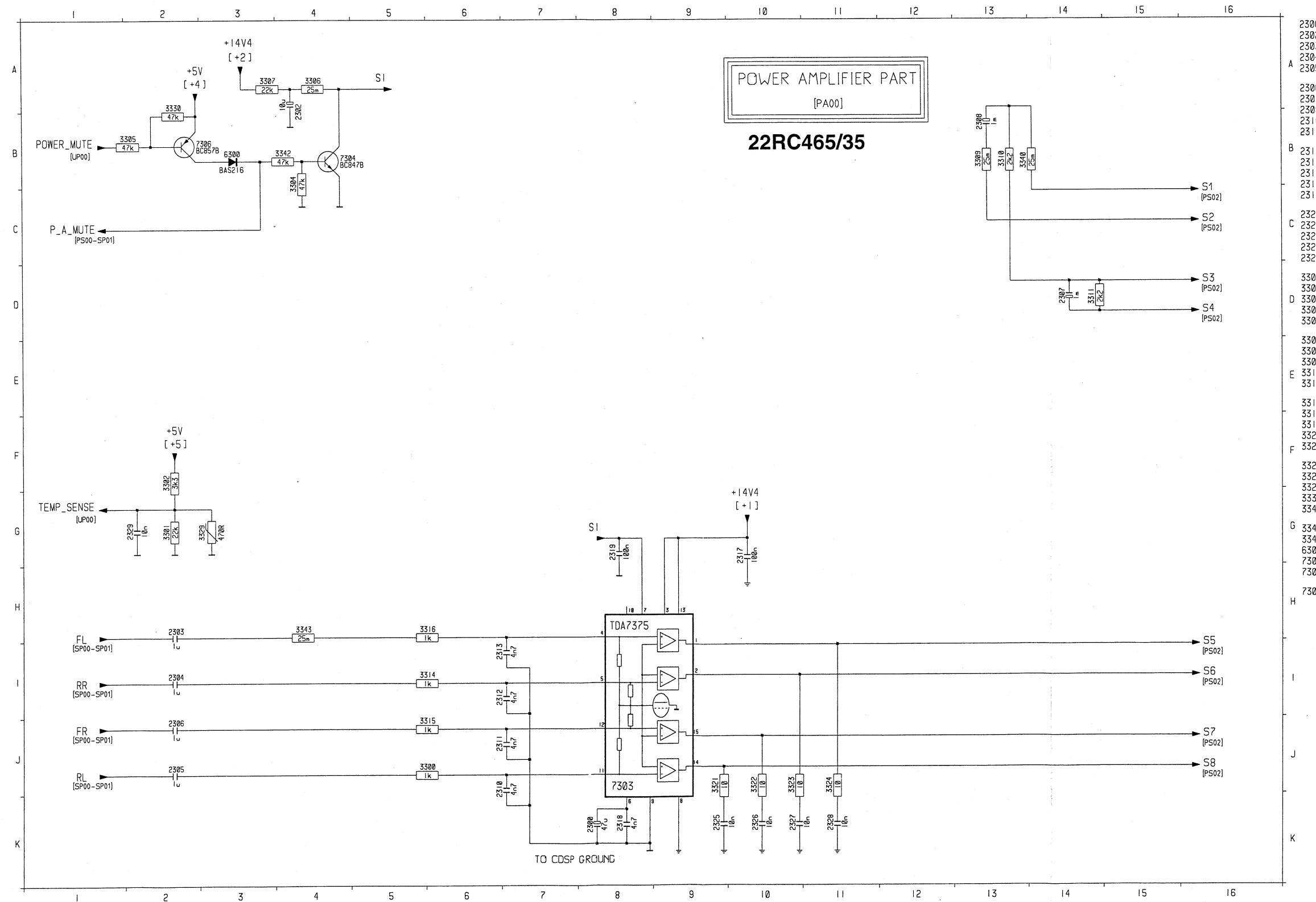


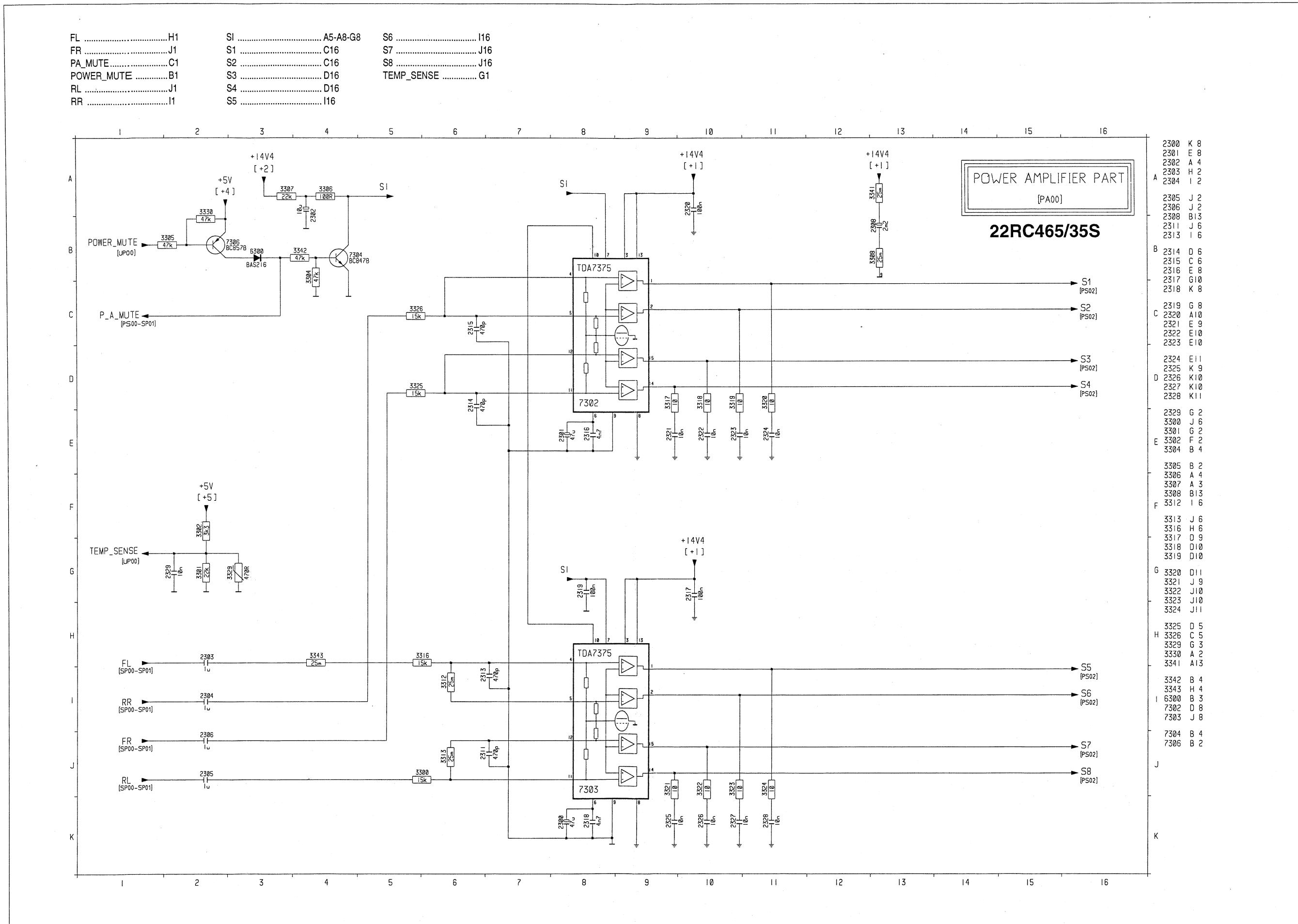
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2183	G 8	3209	I 3	3818	F 7
2189	E 8	3214	I 3	3819	F 6
2212	G 2	3223	H 3	3820	E 2
2219	G 3	3241	G 7	3836	C 1
2222	G 3	3305	D 7	3850	C 8
2223	G 3	3306	A 2	3854	C 7
2248	I 3	3307	A 2	3865	E 8
2252	F 7	3308	B 3	3866	D 8
2253	G 7	3309	B 4	3882	C 1
2303	C 5	3310	B 4	3886	B 2
2304	D 5	3311	B 4	4999	G 1
2305	D 5	3317	B 8	5174	F 8
2306	D 6	3318	C 8	5200	J 2
2314	B 4	3319	C 8	5503	F 3
2315	B 3	3320	C 8	5651	F 5
2316	A 4	3321	A 7	6200	G 4
2317	A 5	3322	A 8	6300	D 7
2318	A 5	3323	B 8	6401	A 6
2319	A 4	3324	B 8	6406	C 3
2320	A 4	3325	A 4	6407	B 2
2321	B 8	3330	D 6	6410	C 6
2322	C 8	3340	B 3	6412	E 7
2323	C 8	3341	B 4	6424	D 4
2324	C 8	3400	C 6	6432	G 7
2325	A 7	3404	D 6	6653	D 7
2326	A 8	3405	D 7	6654	D 7
2327	B 8	3406	C 3	6740	C 4
2328	B 8	3413	D 6	6800	C 1
2402	C 6	3430	D 6	7172	E 8
2407	C 3	3433	D 2	7306	D 7
2408	I 5	3436	D 3	7400	D 3
2409	I 6	3445	C 2	7410	C 3
2415	C 7	3451	C 3	7418	F 6
2419	B 7	3470	D 3	7701	J 4
2423	G 7	3471	D 3	7800	C 1
2428	D 2	3472	C 3	7803	F 5
2434	D 7	3473	C 3	7806	F 6
2438	D 4	3474	B 2		
2516	G 2	3475	B 2		
2517	G 2	3485	G 7		
2553	E 3	3486	F 7		
2554	F 3	3487	F 6		
2577	G 3	3488	H 6		
2653	F 7	3489	G 6		
2654	F 7	3523	E 3		
2655	G 7	3524	E 3		
2702	I 4	3591	D 2		
2703	J 4	3597	E 1		
2705	J 5	3700	H 5		
2708	J 3	3702	I 4		
2709	J 3	3703	I 4		
2710	J 3	3704	I 4		
2711	J 3	3705	I 4		
2801	E 5	3709	J 5		
2805	E 1	3710	J 5		
2815	B 1	3711	J 4		
2816	A 1	3712	J 3		
2817	B 1	3713	J 3		
2818	B 1	3714	J 3		
2819	B 2	3715	J 4		
2820	B 1	3716	I 5		
2821	B 1	3717	I 4		
2822	B 1	3739	C 4		
2825	B 2	3742	C 6		
2826	A 1	3744	D 4		
2850	C 7	3751	D 4		
2856	B 8	3773	D 4		
2857	C 8	3774	D 5		
2858	B 8	3775	D 5		
3174	E 8	3805	C 2		
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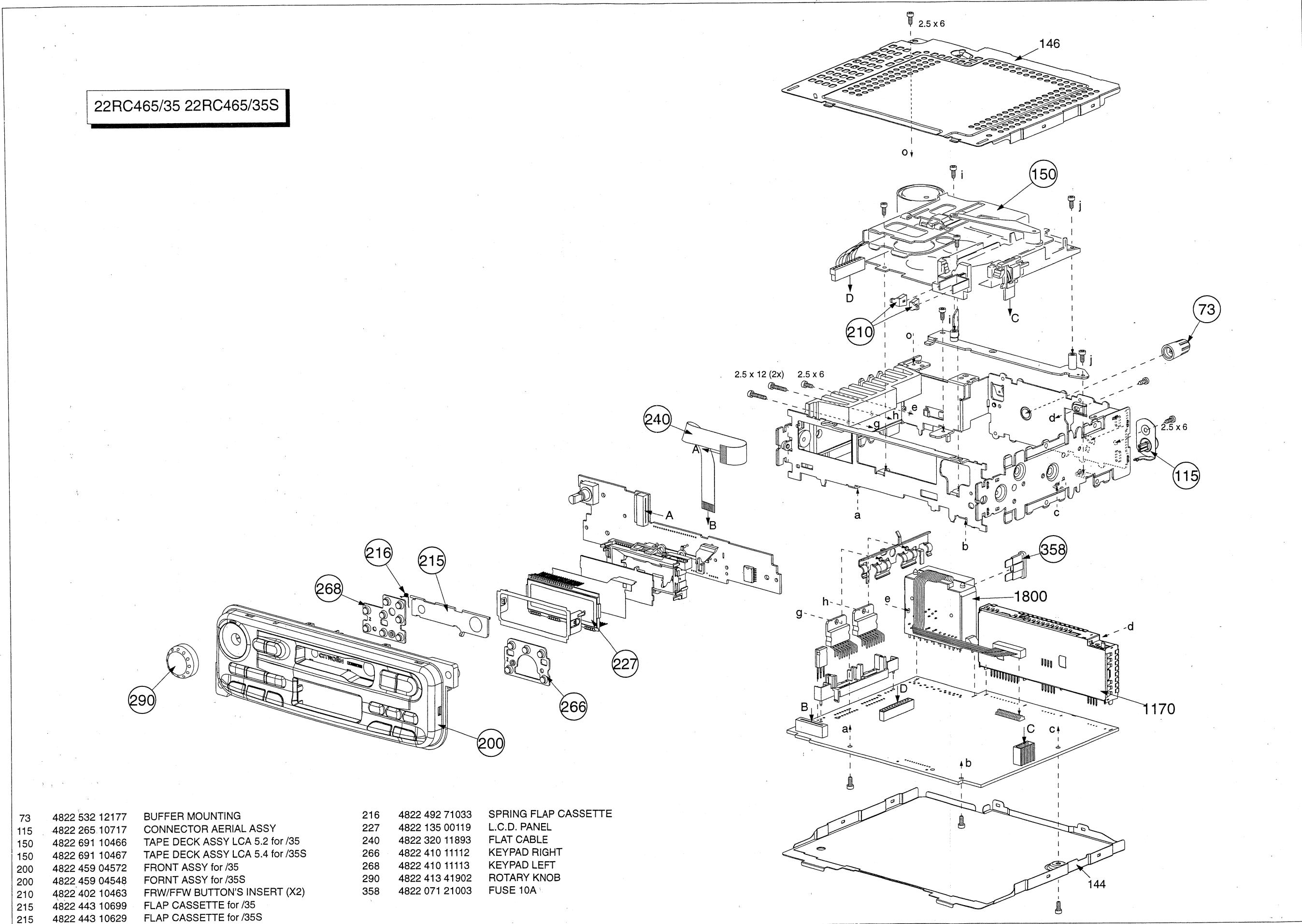




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FR	J1	C16	S7	J16
PA_MUTE	C1	C16	S8	J16
POWER_MUTE	B1	D16	TEMP_SENSE	G1
RL	J1	D16			
RR	I1	I16			
			S5			





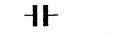


Miscellaneous			II
1170	4822 210 10721	TUNER IC96 12CV	2250 5322 122 32531 100pF 5% NP0 50V
1401	4822 252 51164	SM FUSE T1.5A 32V	2251 5322 122 32531 100pF 5% NP0 50V
1500	4822 242 10564	RES CER SM 16MHZ	2252 4822 126 13849 220nF10% 0805 X7R
1701	4822 267 40818	CON BM V 5P F 2.54	2253 4822 126 13849 220nF10% 0805 X7R
1800	4822 265 10941	CONN. BLOCK /35S	2254 4822 126 13196 100nF10% 0805 X7R
1800	4822 265 10955	CONN. BLOCK /35	2255 4822 124 23279 22 μ F 20% 16V
			2256 4822 124 22646 47 μ F 20% 16V
			2257 4822 126 14043 1 μ F +80-20% 16V
			2258 4822 126 14043 1 μ F +80-20% 16V
2181	5322 122 32531	100pF 5% NP0	2300 4822 124 22646 47 μ F 20% 16V
2182	5322 122 32654	22nF 10% X7R	2301 4822 124 22646 47 μ F 20% 16V
2183	5322 122 32654	22nF 10% 50V X7R	2302 4822 124 41017 10 μ F 20% 16V
2189	4822 126 13196	100nF 10% 25V X7R	2303 4822 126 14043 1 μ F +80-20% 16V 0805
2202	5322 122 34123	1nF 10% 50V X7R	2304 4822 126 14043 1 μ F +80-20% 16V 0805
2203	4822 126 13196	100nF 10% 25V X7R	2305 4822 126 14043 1 μ F +80-20% 16V 0805
2204	4822 126 13849	220nF 10% X7R 16V	2306 4822 126 14043 1 μ F +80-20% 16V 0805
2205	4822 126 13849	220nF 10% X7R 16V	2307 4822 124 80766 1000 μ F 20% 25V
2206	5322 126 10223	4,7nF 10% X7R 50V	2308 4822 124 80766 1000 μ F 20% 25V /35
2207	5322 126 10223	4,7nF 10% X7R 50V	2308 4822 124 80769 2200 μ F 20% 16V /35S
2208	5322 122 32531	100pF 5% NP0 50V	2310 5322 126 10223 4N7 10% 50V
2209	4822 122 33342	33nF 10% X7R 50V	2311 5322 122 32268 470PF 5% 0805 NP0 /35S
2210	5322 122 32654	22nF 10% 50V	2311 5322 126 10223 4N7 10% 50V 0805 /35
2211	4822 126 13196	100nF 10% X7R 25V	2312 5322 126 10223 4N7 10% 50V 0805
2212	5322 122 34098	10nF 10% X7R 50V	2313 5322 122 32268 470PF 5% 0805 NP0 /35S
2213	5322 122 34098	10nF 10% X7R 50V	2313 5322 126 10223 4N7 10% 50V 0805 /35
2214	5322 122 31863	330pF 5% NP0 50V	2314 5322 122 32268 470PF 5% 0805 NP0
2215	5322 122 33538	150pF 5% NP0 50V	2315 5322 122 32268 470PF 5% 0805 NP0
2216	5322 122 31863	330pF 5% NP0 50V	2316 5322 126 10223 4N7 10% X7R 50V
2217	5322 122 34123	1nF 10% X7R 50V	2317 4822 126 13196 100nF10% X7R 25V
2218	5322 122 34123	1nF 10% X7R 50V	2318 5322 126 10223 4N7 10% 50V 0805
2219	5322 122 34098	10nF 10% X7R 50V	2319 4822 126 13196 100nF10% X7R 25V
2220	5322 122 34123	1nF 10% X7R 50V	2320 4822 126 13196 100nF10% X7R 25V
2221	5322 122 34123	1nF 10% X7R 50V	2321 5322 122 34098 10nF10% X7R 50V
2222	5322 122 34098	10nF 10% X7R 50V	2322 5322 122 34098 10nF10% X7R 50V
2223	5322 122 34098	10nF 10% X7R 50V	2323 5322 122 34098 10nF10% X7R 50V
2224	5322 122 34123	1nF 10% X7R 50V	2324 5322 122 34098 10nF10% X7R 50V
2225	4822 126 13196	100nF 10% X7R 25V	2325 5322 122 34098 10nF10% X7R 50V
2226	5322 122 34123	1nF 10% X7R 50V	2326 5322 122 34098 10nF10% X7R 50V
2228	4822 126 13196	100nF 10% X7R 25V	2327 5322 122 34098 10nF10% X7R 50V
2229	5322 122 32531	100pF 5% NP0 50V	2328 5322 122 34098 10nF10% X7R 50V
2230	5322 122 32531	100pF 5% NP0 50V	
2231	4822 126 13196	100nF10% X7R 25V	2329 5322 122 34098 10nF10% X7R 50V
2232	4822 126 13196	100nF10% X7R 25V	2401 5322 126 10223 4N7 10% X7R 50V
2233	5322 122 31863	330PF 5% 0805 NP0	2402 4822 122 33342 33nF10% X7R 50V
2234	5322 122 31863	330PF 5% 0805 NP0	2405 4822 124 80769 2200 μ F 20% 16V
2235	5322 122 34123	1nF 10% X7R 50V	2407 5322 122 32268 470pF5% NP0 50V
2236	5322 122 34123	1nF 10% X7R 50V	2408 4822 126 13849 220nF10% X7R 16V
2237	4822 124 23279	22 μ F 20% 16V	2409 4822 126 13849 220nF10% X7R 16V
2238	4822 124 23582	220 μ F 20% 10V	2410 4822 124 80766 1000 μ F 20% 25V
2239	4822 124 80453	100 μ F 20% 10V	2411 4822 124 80453 100 μ F 20% 10V
2240	4822 124 23279	22 μ F 20% 16V	2412 4822 124 23281 33 μ F 20% 16V
2241	4822 126 14043	1 μ F +80-20% 16V	2413 4822 126 13343 47nF10% X7R 25V
2242	4822 124 23279	22 μ F 20% 16V	2414 4822 124 23282 1 μ F 20% 50V
2243	4822 124 23282	1 μ F 20% 50V	2415 4822 122 33575 220pF5% NP0 50V
2244	5322 122 34123	1nF10% X7R 50V	2416 4822 124 22646 47 μ F 20% 16V
2245	5322 122 32448	10pF 5% NP0 50V	2417 4822 126 14043 1 μ F +80-20% 16V
2246	5322 122 32448	10pF 5% NP0 50V	2418 4822 126 13849 220nF10% X7R 16V
2247	5322 122 34123	1nF10% X7R 50V	2419 5322 126 10223 4N7 10% X7R 50V
2248	4822 122 33575	220pF 5% NP0 50V	2420 4822 126 13196 100nF10% X7R 25V
2249	4822 122 33575	220pF 5% NP0 50V	2421 4822 126 14043 1 μ F +80-20% 16V
			2423 5322 122 32654 22nF10% X7R 50V

II	II	II
2425 4822 126 13849 220nF10% X7R 16V	3179 4822 051 20008	JUMP. MAX 0R05 0805
2426 4822 126 13343 47nF10% X7R 25V	3186 4822 117 11449	2K2 5% 0,1W
2428 5322 122 34098 10nF10% X7R 50V	3192 4822 051 20008	JUMP. MAX 0R05 0805
2429 5322 122 34098 10nF10% X7R 50V	3201 4822 051 20273	27K Ω 5% 0,1W
2431 4822 124 41017 10 μ F 20% 16V	3202 4822 051 20273	27K Ω 5% 0,1W
2434 4822 126 13196 100nF10% X7R 25V	3203 4822 117 11449	2K2 5% 0,1W
2438 4822 126 13196 100nF10% X7R 25V	3204 4822 117 11449	2K2 5% 0,1W
2516 5322 122 33869 15pF5% NP0 50V	3205 4822 117 10833	10K Ω 5% 0,1W
2517 5322 122 33869 15pF5% NP0 50V	3206 4822 117 11503	220 Ω 5% 0,1W
2552 4822 122 33342 33nF10% X7R 50V	3207 4822 051 20101	100 Ω 5% 0,1W
2553 4822 126 13196 100nF10% X7R 25V	3208 4822 051 20101	100 Ω 5% 0,1W
2554 4822 126 13196 100nF10% X7R 25V	3209 4822 051 20104	100K Ω 5% 0,1W
2561 5322 122 34098 10nF10% X7R 50V	3210 4822 051 20332	3K3 5% 0,1W
2577 4822 122 33342 33nF10% X7R 50V	3211 4822 051 20332	3K3 5% 0,1W
2578 4822 122 33342 33nF10% X7R 50V	3212 4822 117 10833	10K Ω 5% 0,1W
2650 5322 122 34098 10nF10% X7R 50V	3213 4822 051 20562	5K6 5% 0,1W
2651 4822 126 13196 100nF10% X7R 25V	3214 4822 051 20101	100 Ω 5% 0,1W
2653 5322 122 34123 1nF10% 50V 0805 X7R	3215 4822 051 20008	JUMP. MAX 0R05
2654 5322 122 34123 1nF10% 50V 0805 X7R	3216 4822 051 20272	2K7 5% 0,1W
2655 5322 122 34123 1nF10% 50V 0805 X7R	3217 4822 051 20101	100 Ω 5% 0,1W
2656 5322 122		

3318	4822 051 20109	10Ω 5% 0,1W	3487	4822 117 10833	10KΩ 5% 0,1W
3319	4822 051 20109	10Ω 5% 0,1W	3488	4822 117 10833	10KΩ 5% 0,1W
3320	4822 051 20109	10Ω 5% 0,1W	3489	4822 051 20224	220KΩ 5% 0,1W
3321	4822 051 20109	10Ω 5% 0,1W	3516	4822 051 20101	100Ω 5% 0,1W
3322	4822 051 20109	10Ω 5% 0,1W	3517	4822 051 20101	100Ω 5% 0,1W
3323	4822 051 20109	10Ω 5% 0,1W	3523	4822 051 20472	4K7 5% 0,1W
3324	4822 051 20109	10Ω 5% 0,1W	3524	4822 051 20472	4K7 5% 0,1W
3325	4822 051 20153	15KΩ 5% 0,1W	3525	4822 051 20473	47KΩ 5% 0,1W
3326	4822 051 20153	15KΩ 5% 0,1W	3526	4822 051 20473	47KΩ 5% 0,1W
3329	4822 116 40255	PTC 470Ω 5% 0 16V	3551	4822 051 20008	JUMP. MAX 0R05 0805
3330	4822 051 20473	47KΩ 5% 0,1W	3556	4822 051 20223	JUMP. MAX 0R05 0805
3340	4822 051 10008	JUMP MAX 0R05 1206	3557	4822 051 20473	47KΩ 5% 0,1W
3341	4822 051 10008	JUMP MAX 0R05 1206	3558	4822 051 20473	47KΩ 5% 0,1W
3342	4822 051 20473	47KΩ 5% 0,1W	3567	4822 051 20473	47KΩ 5% 0,1W
3343	4822 051 20008	JUMP. MAX 0R05 0805	3568	4822 051 20101	100Ω 5% 0,1W
3400	4822 051 10008	JUMP MAX 0R05 1206	3569	4822 051 20273	27KΩ 5% 0,1W
3402	4822 051 20473	47KΩ 5% 0,1W	3571	4822 051 20471	470Ω 5% 0,1W
3403	4822 051 20473	47KΩ 5% 0,1W	3572	4822 051 20104	100KΩ 5% 0,1W
3404	4822 051 20224	220KΩ 5% 0,1W	3574	4822 051 20473	47KΩ 5% 0,1W
3405	4822 051 20104	100KΩ 5% 0,1W	3576	4822 051 20223	22KΩ 5% 0,1W
3406	4822 051 20154	150KΩ 5% 0,1W	3588	4822 117 10833	10KΩ 5% 0,1W
3408	4822 051 20273	27KΩ 5% 0,1W	3589	4822 117 10833	10KΩ 5% 0,1W
3409	4822 051 20472	4K7 5% 0,1W	3591	4822 117 10833	10KΩ 5% 0,1W
3410	4822 051 20473	47KΩ 5% 0,1W	3592	4822 051 20008	JUMP. MAX 0R05 0805
3411	4822 051 20473	47KΩ 5% 0,1W	3594	4822 051 20223	22KΩ 5% 0,1W
3412	4822 051 20101	100Ω 5% 0,1W	3595	4822 051 20473	47KΩ 5% 0,1W
3413	4822 051 20102	1KΩ 5% 0,1W	3596	4822 051 20473	47KΩ 5% 0,1W
3414	4822 116 40267	PTC 3R3 PM25 20V	3597	4822 051 20102	1KΩ 5% 0,1W
3417	4822 051 20154	150KΩ 5% 0,1W	3652	4822 051 20102	1KΩ 5% 0,1W
3418	4822 051 20471	470Ω 5% 0805 /35	3658	4822 116 40221	PTC PTH 60G31AR8R2MT2
3418	4822 117 11503	220Ω 5% 0805 /35S	3659	4822 051 20101	100Ω 5% 0,1W
3419	4822 051 20471	470Ω 5% 0805 /35	3660	4822 116 40221	PTC PTH 60G31AR8R2MT2
3419	4822 117 11503	220Ω 5% 0805 /35S	3672	4822 051 20008	CHIP JUMPER 0805
3420	4822 051 20471	470Ω 5% 0805 /35	3673	4822 051 20008	CHIP JUMPER 0805
3420	4822 117 11503	220Ω 5% 0805 /35S	3690	4822 051 10008	CHIP JUMPER 1206
3421	4822 051 20471	470Ω 5% 0805 /35	3700	4822 051 20273	27KΩ 5% 0,1W
3421	4822 117 11503	220Ω 5% 0805 /35S	3702	4822 051 20122	1K2 5% 0,1W
3422	4822 051 20473	47KΩ 5% 0,1W	3703	4822 051 20334	330KΩ 5% 0,1W
3423	4822 051 20008	0,1W JUMP	3704	4822 051 20822	8K2 5% 0,1W
3424	4822 051 20008	0,1W JUMP	3705	4822 117 10965	18KΩ 5% 0,1W
3430	4822 051 20109	10Ω 5% 0,1W	3709	4822 051 20334	330KΩ 5% 0,1W
3433	4822 051 20472	4K7 5% 0,1W	3710	4822 051 20822	8K2 5% 0,1W
3435	4822 051 20104	100KΩ 5% 0,1W	3711	4822 051 20122	1K2 5% 0,1W
3436	4822 051 20333	33KΩ 5% 0,1W	3712	4822 051 20104	100KΩ 5% 0,1W
3442	4822 051 20224	220KΩ 5% 0,1W	3713	4822 051 20104	100KΩ 5% 0,1W
3444	4822 051 20102	1KΩ 5% 0,1W	3714	4822 051 20104	100KΩ 5% 0,1W
3445	4822 051 20224	220KΩ 5% 0,1W	3715	4822 051 20104	100KΩ 5% 0,1W
3447	4822 051 20224	220KΩ 5% 0,1W	3716	4822 051 20109	10Ω 5% 0,1W
3451	4822 051 20224	220KΩ 5% 0,1W	3717	4822 117 10965	18KΩ 5% 0,1W
3454	4822 051 20224	220KΩ 5% 0,1W	3739	4822 051 20008	JUMP MAX 0R05 0805
3458	4822 051 20104	100KΩ 5% 0,1W	3742	4822 051 20008	JUMP MAX 0R05 0805
3468	4822 051 20008	0,1W JUMP	3743	4822 051 20102	1KΩ 5% 0,1W
3470	4822 051 20104	100KΩ 5% 0,1W	3744	4822 051 20228	2R2 5% 0,1W
3471	4822 051 20224	220KΩ 5% 0,1W	3745	4822 051 20561	560Ω 5% 0,1W
3472	4822 051 20102	1KΩ 5% 0,1W	3747	4822 051 20473	47KΩ 5% 0,1W
3473	4822 051 20473	47KΩ 5% 0,1W	3748	4822 051 20473	47KΩ 5% 0,1W
3474	4822 051 20109	10Ω 5% 0,1W	3751	4822 051 20008	JUMP MAX 0R05 0805
3475	4822 051 20109	10Ω 5% 0,1W	3754	4822 051 20104	100KΩ 5% 0,1W
3485	4822 051 20224	220KΩ 5% 0,1W	3755	4822 117 11449	2K2 5% 0,1W
3486	4822 051 20273	27KΩ 5% 0,1W	3756	4822 051 20008	JUMP MAX 0R05 0805

3762	4822 051 20473	47KΩ 5% 0,1W	5400	4822 157 70935	COIL 97UH 10A /35S
3763	4822 051 20008	JUMP MAX 0R05 0805	5401	4822 157 11206	LAL04 A 0U22 20%
3764	4822 051 20473	47KΩ 5% 0,1W	5501	4822 157 71206	EMI 100MHZ 600R
3770	4822 051 20102	1KΩ 5% 0,1W	5503	4822 157 71206	EMI 100MHZ 600R
3771	4822 051 20102	1KΩ 5% 0,1W	5650	4822 242 10709	RES CER 6MHZ
3772	4822 051 20102	1KΩ 5% 0,1W	5651	4822 157 71206	EMI 100MHZ 600R
3773	4822 051 20228	2R2 5% 0,1W			
3774	4822 051 20228	2R2 5% 0,1W			
3775	4822 051 20228	2R2 5% 0,1W			
3805	4822 117 10833	10KΩ 5% 0,1W			
3806	4822 051 20332	3K3 5% 0,1W			
3807	4822 051 20008	JUMP. MAX 0R05 0805			
3808	4822 051 20473	47KΩ 5% 0,1W			
3809	4822 051 20473	47KΩ 5% 0,1W			
3810	4822 051 20008	JUMP. MAX 0R05 0805			
3812	4822 051 20102	1KΩ 5% 0,1W			
3813	4822 117 10833	10KΩ 5% 0,1W			
3814	4822 051 20473	47KΩ 5% 0,1W			
3815	4822 051 20473	47KΩ 5% 0,1W			
3816	4822 051 20473	47KΩ 5% 0,1W			
3817	4822 051 20473	47KΩ 5% 0,1W			
3818	4822 051 20473	47KΩ 5%			

					
7741	4822 130 60511	BC847B	3926	4822 117 11449	2K2 5% 0,1W
7743	4822 130 42615	BC817-40	3927	4822 117 10833	10KΩ 5% 0,1W
7745	4822 130 60511	BC847B	3928	4822 051 20101	100Ω 5% 0,1W
7800	4822 130 42132	BC807	3929	4822 051 20101	100 5% 0,1W
7801	4822 130 60511	BC847B	3930	4822 117 10833	10KΩ 5% 0,1W
7802	4822 130 10659	TRA POW 2SD2039	3935	4822 117 11449	2K2 5% 0,1W
7803	4822 130 60511	BC847B	3936	4822 117 11449	2K2 5% 0,1W
7804	5322 130 60508	BC857B	3937	4822 117 11449	2K2 5% 0,1W
7805	5322 130 60508	BC857B	3938	4822 117 11449	2K2 5% 0,1W
7806	4822 130 60511	BC847B	3939	4822 117 11449	2K2 5% 0,1W
7840	5322 130 60508	BC857B	3940	4822 051 20472	4K7 5% 0,1W
7850	4822 130 60511	BC847B	3941	4822 051 20332	3K3 5% 0,1W
7880	4822 209 33238	HEF4077BT	3942	4822 051 20332	3K3 5% 0,1W
			3943	4822 051 20332	3K3 5% 0,1W
			3944	4822 051 20332	3K3 5% 0,1W
<u>FRONT ELECTRICAL PARTS</u>			3945	4822 051 20332	3K3 5% 0,1W
Miscellaneous			3946	4822 117 11449	2K2 5% 0,1W
1902	4822 134 10085	LAMP 10V 60MA	3947	4822 051 20008	JUMP. MAX 0R05 0805
1903	4822 134 10085	LAMP 10V 60MA	3954	4822 051 20473	47K 5% 0,1W
1904	4822 134 10085	LAMP 10V 60MA	3955	4822 051 20331	330Ω 5% 0,1W
1932	4822 135 00119	LCD ASSY	3956	4822 051 20272	2K7 5% 0,1W
1981	4822 101 30873	ROT ENCODER 15P	3981	4822 051 20472	4K7 5% 0,1W
			3982	4822 051 20472	4K7 5% 0,1W
			3983	4822 051 20223	22KΩ 5% 0,1W
			3984	4822 051 20223	22KΩ 5% 0,1W
					
2901	4822 126 13196	100nF 10% 25V	6901	4822 130 10912	LED SM LPT670-H
2902	4822 126 13196	100nF 10% 25V	6902	4822 130 10912	LED SM LPT670-H
2903	4822 126 13196	100nF 10% 25V	6903	4822 130 10912	LED SM LPT670-H
2904	4822 126 13196	100nF 10% 25V	6904	4822 130 10912	LED SM LPT670-H
2993	4822 126 13343	47nF 10% 25V	6905	4822 130 10912	LED SM LPT670-H
2994	4822 126 13343	47nF 10% 25V	6906	4822 130 10912	LED SM LPT670-H
			6907	4822 130 10912	LED SM LPT670-H
			6908	4822 130 10912	LED SM LPT670-H
			6909	4822 130 10912	LED SM LPT670-H
			6910	4822 130 10912	LED SM LPT670-H
3901	4822 051 20272	2K7 5% 0,1W	6911	4822 130 10912	LED SM LPT670-H
3902	4822 051 20272	2K7 5% 0,1W	6912	4822 130 10912	LED SM LPT670-H
3903	4822 051 20272	2K7 5% 0,1W	6913	4822 130 10912	LED SM LPT670-H
3904	4822 051 20272	2K7 5% 0,1W	6917	4822 130 10848	LED LSPT670
3905	4822 117 11449	2K2 5% 0,1W			
3906	4822 117 11449	2K2 5% 0,1W			
3907	4822 117 11449	2K2 5% 0,1W			
3908	4822 117 11449	2K2 5% 0,1W	7901	5322 209 11578	IC PCF8574T
3909	4822 117 11449	2K2 5% 0,1W	7902	4822 209 15134	IC PCF8576CT
3910	4822 117 11449	2K2 5% 0,1W	7909	4822 130 60511	BC847B
3911	4822 117 11449	2K2 5% 0,1W			
3912	4822 117 11449	2K2 5% 0,1W			
3913	4822 117 11449	2K2 5% 0,1W			
3914	4822 051 20272	2K7 5% 0,1W			
3915	4822 051 20272	2K7 5% 0,1W			
3916	4822 051 20272	2K7 5% 0,1W			
3917	4822 051 20272	2K7 5% 0,1W			
3918	4822 051 20272	2K7 5% 0,1W			
3919	4822 117 11449	2K2 5% 0,1W			
3920	4822 117 11449	2K2 5% 0,1W			
3921	4822 117 11449	2K2 5% 0,1W			
3922	4822 051 20272	2K7 5% 0,1W			
3923	4822 051 20272	2K7 5% 0,1W			
3924	4822 051 20332	3K3 5% 0,1W			
3925	4822 051 20184	180K 5% 0,1W			

**Service
Service
Service****Supplement**

Service Manual

12 V

This supplement should be used together with the LCA 2.4 Service Manual with service code:
4822 725 23523. 4728

This supplement contains: technical data, general information, connector and switch overviews, exploded views and partslists for both the LCA 5.2 and LCA 5.4 tape decks.
For all parts not mentioned here, refer to the LCA 2.4 Service Manual.

TECHNICAL DATA

Operating voltage	: 9 - 16V (nom. 13.2V)
Tape speed	: 4.76cm/sec \pm 0.5%
Wow & Flutter	: \leq 0.35% RMS (+10 - +45°C)
Crosstalk (track 2-3)	: < -40dB
Fast wind time	: \leq 115sec (C-60)
Number of tracks	: 2x2
Channel separation (Tracks 1-2/3-4)	: > 35dB

**PHILIPS**

GENERAL

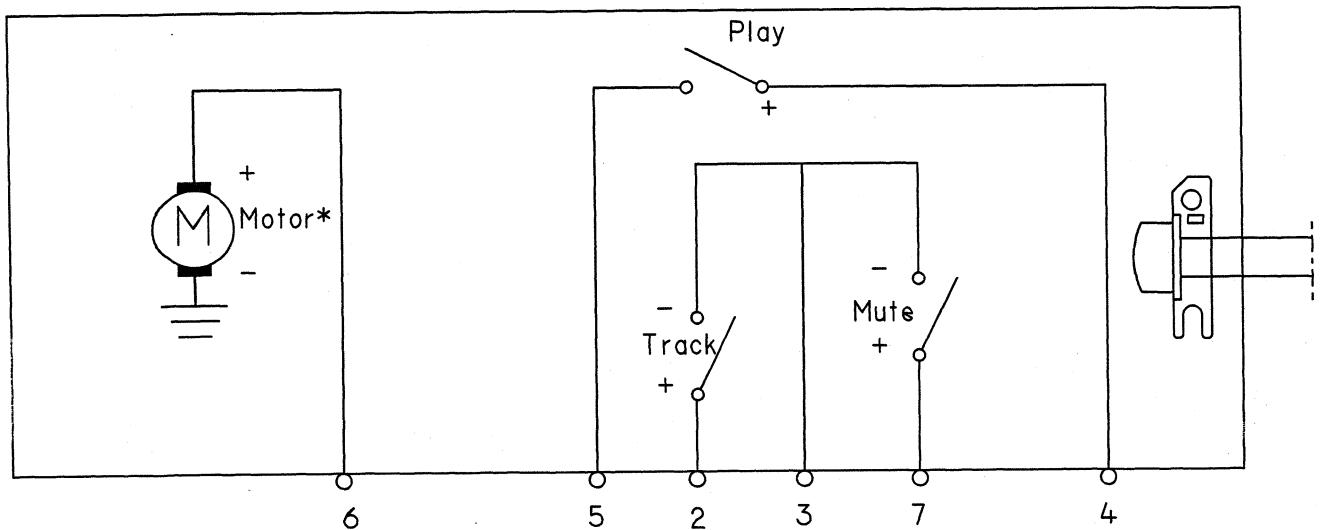
The differences between the LCA 2.4 and **LCA 5.2** are:

- capstan motor at **left** side instead of rear
- no "Key-Off" **standby**
- no Automatic Music **sensor** system
- no Metal / Ferro **tape** selector switch
- interface connector
- changed position of wind buttons

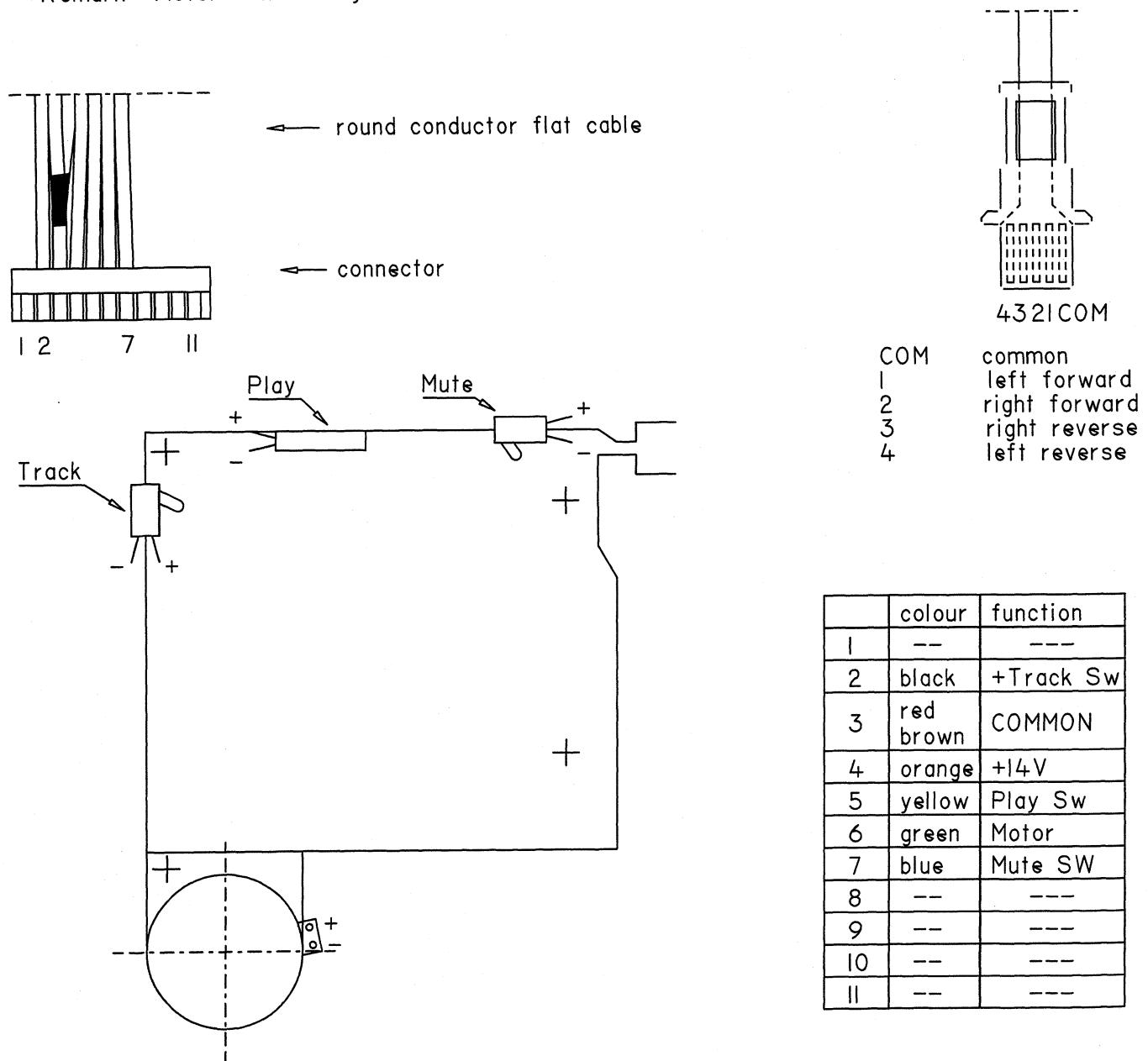
The differences between the LCA 2.4 and **LCA 5.4** are:

- capstan motor at **left** side instead of rear
- interface connector
- changed position of wind buttons

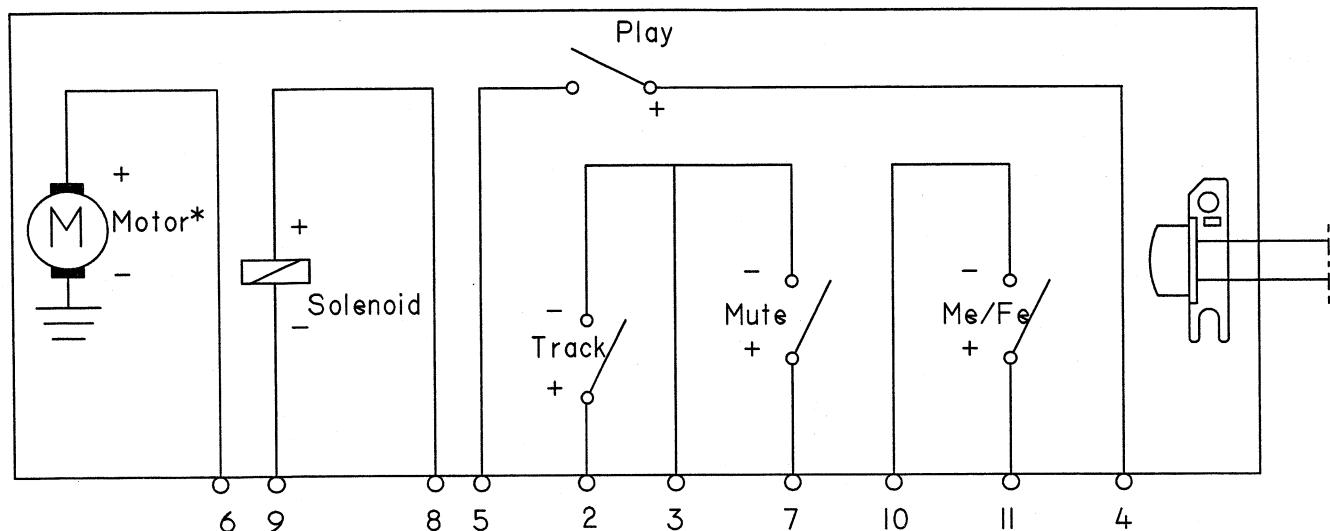
LCA 5.2 CONNECTOR AND SWITCH OVERVIEW



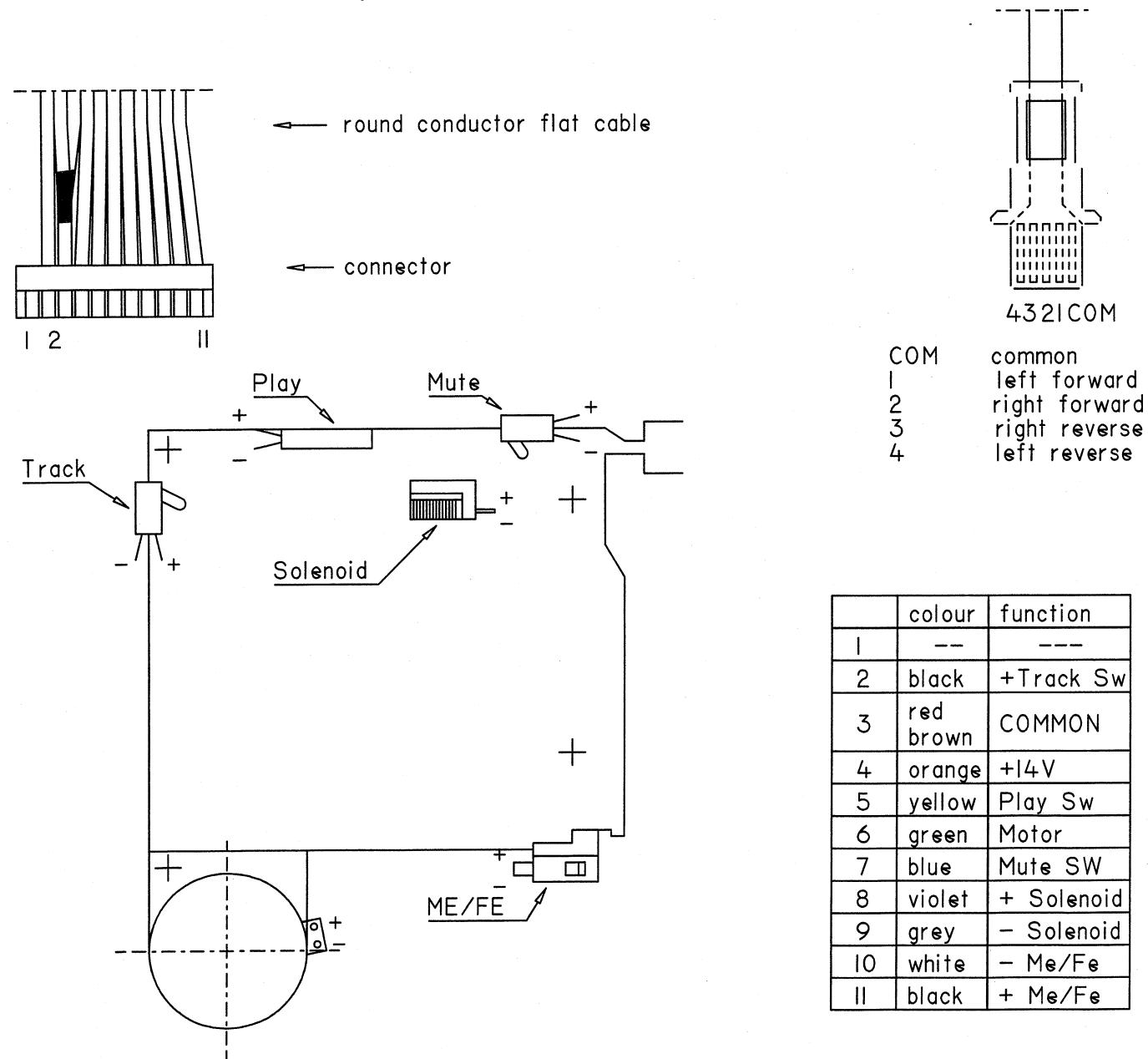
*Remark: Motor - internally connected to chassis!



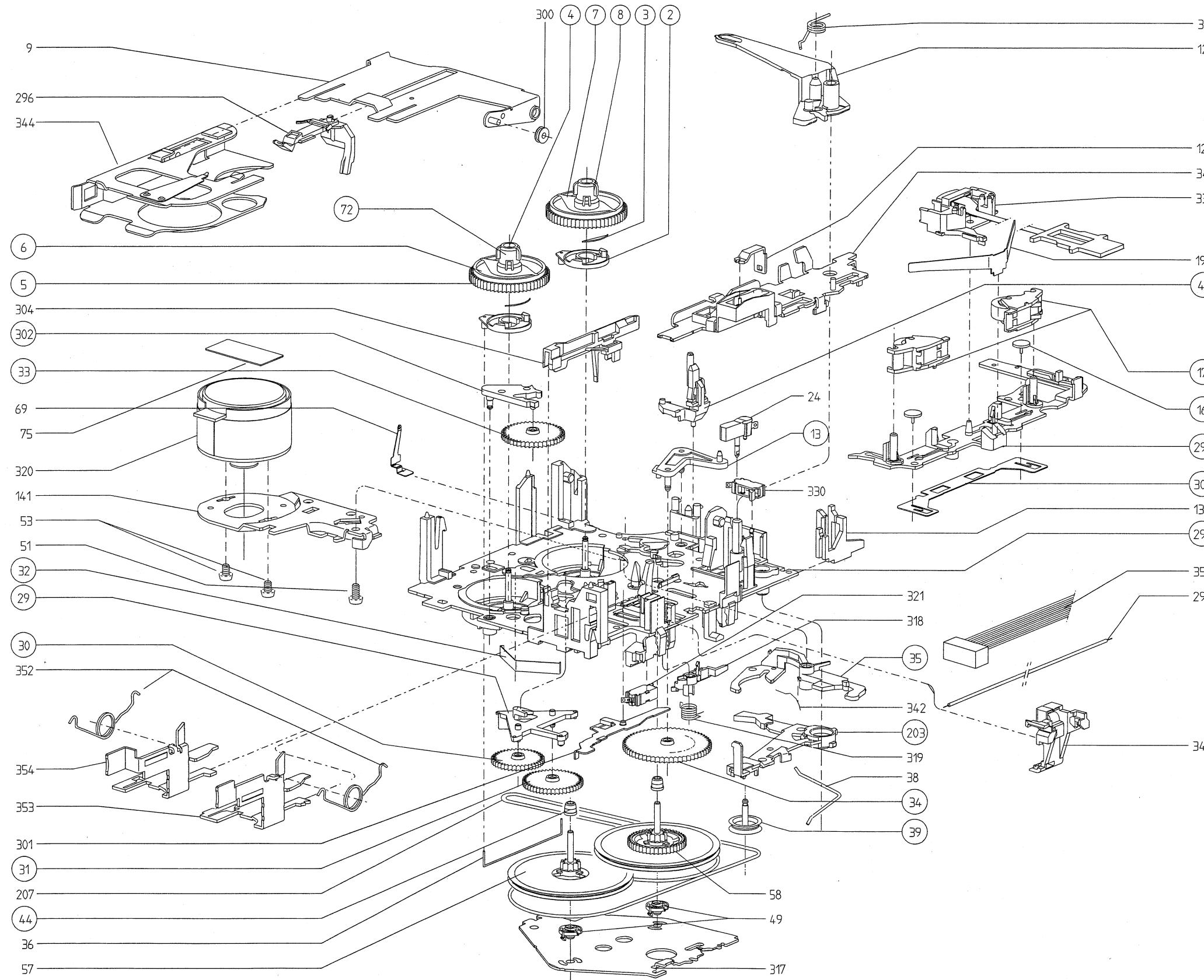
LCA 5.4 CONNECTOR AND SWITCH OVERVIEW



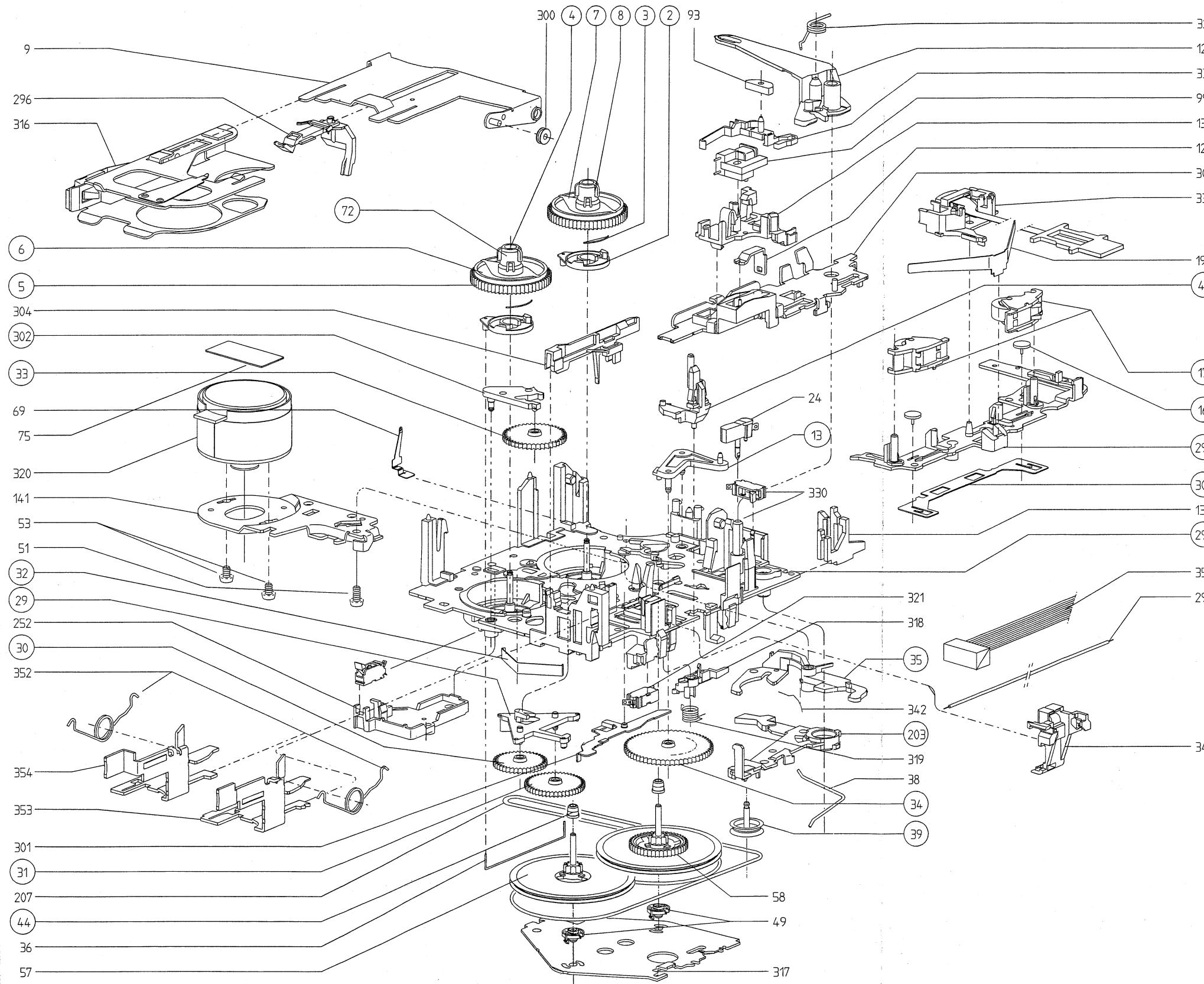
*Remark: Motor – internally connected to chassis!



LCA 5.2 EXPLODED VIEW



LCA 5.4 EXPLODED VIEW



PARTS LIST LCA5.4

2/3	4822 466 70527	Disc assy
4/5/6/7/8	4822 466 70526	Coupling felt assy white
4/5/6/7/72	4822 528 10898	Coupling felt assy black
9	4822 466 81479	Cassette lift
16	4822 528 80983	Fixation
17	4822 403 40157	Pressure roller assy
24	4822 276 13081	Play switch
29/30/31	4822 522 20327	Gear assy
32	4822 492 71468	Leaf spring
35	4822 403 52031	Gear arm
36	4822 492 90076	Lever
39	4822 528 81144	Pulley
40	4822 403 10225	Holder
44	4822 520 30406	Bush bearing
49	4822 520 30407	Excentric
53	4822 502 12548	Special screw
57	4822 528 80985	Flywheel assy
58	4822 528 81517	Flywheel assy
93	4822 281 60165	Anchor plate
99	4822 281 50113	Solenoid magnet
125	4822 403 71287	Lever eject
126	4822 403 71286	Lever blocking
133	4822 466 83076	Plate solenoid II
203	4822 404 21169	Arm
207	4822 358 31136	Driving belt
296	4822 256 92317	Holder cassette
298	4822 403 71282	Head support bracket
300	4822 528 10942	Lift roller
301	4822 466 10758	Plate logic
304	4822 462 30632	Band conductor
305	4822 466 10759	Control plate
306	4822 403 71283	Push button rod
318	4822 403 71284	Latch
319	4822 492 42774	Spring latch
320	4822 361 21764	Motor MSI-5 CCW
321	4822 276 13617	Switch mute
330	4822 276 13616	Switch track/ME-FE
331	4822 403 71285	Lever solenoid
332	4822 249 30227	Magnetic head
344	4822 256 10151	Cassette carrier assy
	4822 691 10467	Deck LCA5.4 complete
Lubrication greases/oils		
	4822 390 10107	Isoflex PDP 65, 30ML
	4822 390 10133	Grease 585K
	4822 390 10134	Grease L30TF
	4822 390 20116	Grease 004, 100G CAN
	4822 390 20128	Isoflex TOPAS L 30

Lubrication greases/oils

4822 390 10107	Isoflex PDP 65, 30ML
4822 390 10133	Grease 585K
4822 390 10134	Grease L30TF
4822 390 20116	Grease 004, 100G CAN
4822 390 20128	Isoflex TOPAS L 30

Service
Service
Service



Service Manual

12 V 

TECHNICAL DATA

Operating voltage	: 9 - 16V (nom. 13.2V)
Tape speed	: 4.76cm/sec ± 0.5%
Wow & flutter	: ≤ 0.35% RMS (+10 - +45°C)
Crosstalk (track 2-3)	: < -40dB
Fast wind time	: ≤ 115secs (C-60)
Number of tracks	: 2x2
Channel separation (Tracks 1-2/3-4)	: > 35dB



PHILIPS

4222

GENERAL

The LCA2.4 has the following features:

- Dolby
- "Key-Off" standby
- Automatic Music sensor System
- Metal / Ferro tape selector switch

MAINTENANCE

The cassette mechanism requires periodic cleaning, as well as periodic lubrication of the principal points.

1. Cleaning with alcohol or spirit

- Playback head (pos.332).
- Pressure rollers & capstans (pos.17, 57 and 58).
- Belt (pos.207) & pulley (pos.39).

To clean head, pressure roller and capstan, it is also possible to use drop-in cassette SBC114 (4822 389 20035).

2. Lubrication

Refer to the 'Lubrication Overview' on page 5.

ADJUSTMENTS AND CHECKS

Equipment required:

- Universal test cassette SBC419 (4822 397 30069)
- Universal test cassette SBC420 (4822 397 30071)
- Friction test cassette 811/CTM (4822 395 30054)
- Spring scale 50-500g (4822 395 80028)
- Puller for clutch (4822 395 60039)
- Wow & flutter meter
- AC millivoltmeters
- Spring scale 50-500 g

1. Pressure roller pressure

The pressure on the capstans should be 210 - 370 grammes (2.1 - 3.7N).

This pressure is measured as follows (NOR and REV):

- Select Play mode.
- Push the pressure roller back at the shown point by means of the spring scale.
- At the point where pressure roller and capstan just disengage the spring scale should be read.
- If the pressure is incorrect, replace spring 19.

2. Friction clutch (Reel assy)

- Insert friction test cassette 811/CTM (NOR and REV).
- Play take-up torque should be 35 - 75g/cm.
- Fast wind torque should be 40 - 150g/cm.
- If the torque is not correct, replace reel assy.

3. Wow & flutter/tape speed (Fig. G)

This check is carried out on a complete car radio; proceed as follows:

- Connect the wow & flutter meter to the LS outputs.
- Insert test cassette SBC419 (or SBC420) and play the 3150Hz signal.
- The wow & flutter value should be $\leq 0.35\%$.
- Tape speed should be 4.76cm/sec. $\pm 0.5\%$.
- The tape speed can be adjusted with screw "S".

In case of an excessive wow & flutter value, check following parts for correct functioning:

- motor 320
- pressure (pinch) rollers 17
- belt 207
- friction clutches (reel assy's)
- flywheels 57 and 58
- pulley 39

4. Azimuth (Figs. G, H)

This check is carried out on a complete car radio; proceed as follows:

- Apply a 4Ω load to both loudspeaker outputs.
- Connect an AC millivoltmeter across both loudspeaker outputs.
- Play the 10kHz signal of test cassette SBC419 or SBC420.
- Adjust screw 'A' for the average of the max. output voltages.
- The maximum allowed difference between both channels is 4 dB.
- Switch over to 'reverse play'.
- If the value measured differs from the previously measured value, bearing 49 in the front flywheel ("reverse") should be displaced.

5. Flywheels 57, 58

Refer to Fig. J.

BELT 207, FLY WHEELS 57 & 58, COG WHEEL ASSY 12,33

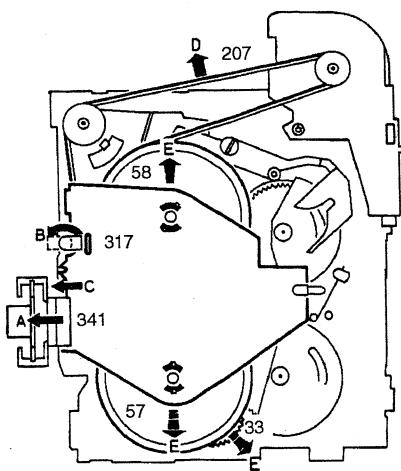


Fig. A

PRESSURE ROLLER 17, HEAD 332

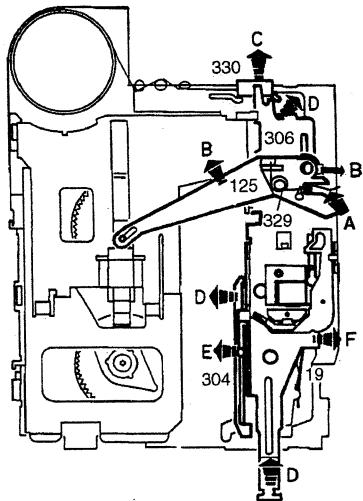


Fig. B

HEAD BRACKET 298

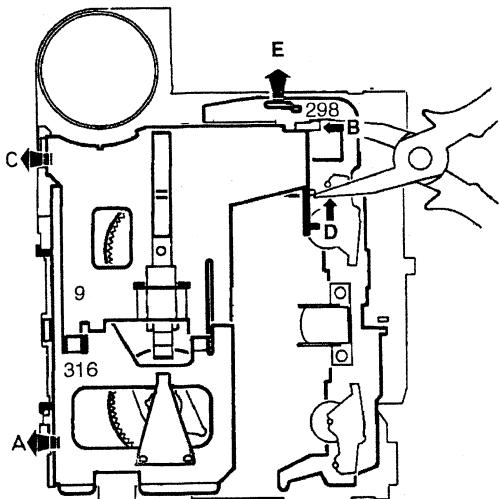


Fig. C

CLUTCH 6

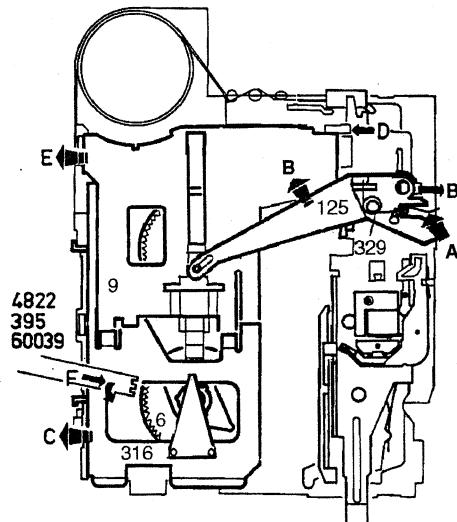


Fig. D

COG WHEELS 30, 31, 34

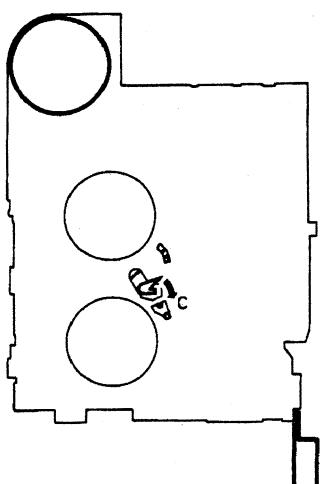


Fig. E

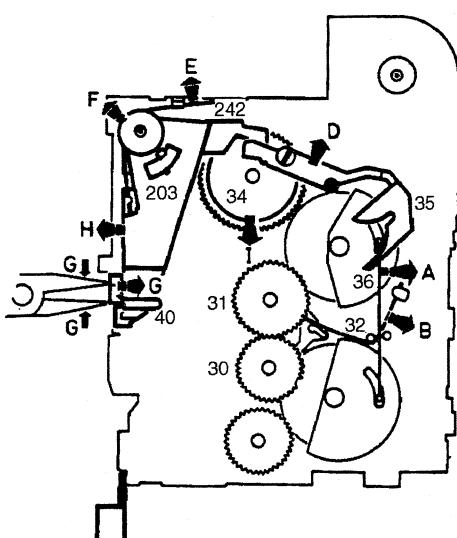


Fig. F

DISASSEMBLY INSTRUCTIONS

Notes:

In a few places parts are locked by synthetic bosses.
To be able to dismantle these parts, the bosses have to be bent, displaced etc.
Gearwheels 33 and 34 and pressure rollers 17 are attached to the spindles by means of a snap connection.
These parts can be disassembled carefully with a screwdriver.
If gearwheel 33 (or 34) has to be replaced, the corresponding bracket 12 (or 13) should ALSO be replaced.

Belt 207, Fly wheels 57 & 58, Cog wheel assy 12 & 33

See figure A.

Pressure roller 17, Head assy 332

See figure B.

Head bracket 298

See figure C.

Clutch 6

See figure D.

Cog wheels 30, 31, 34

See figure E.

Reel base assy

See figure F.

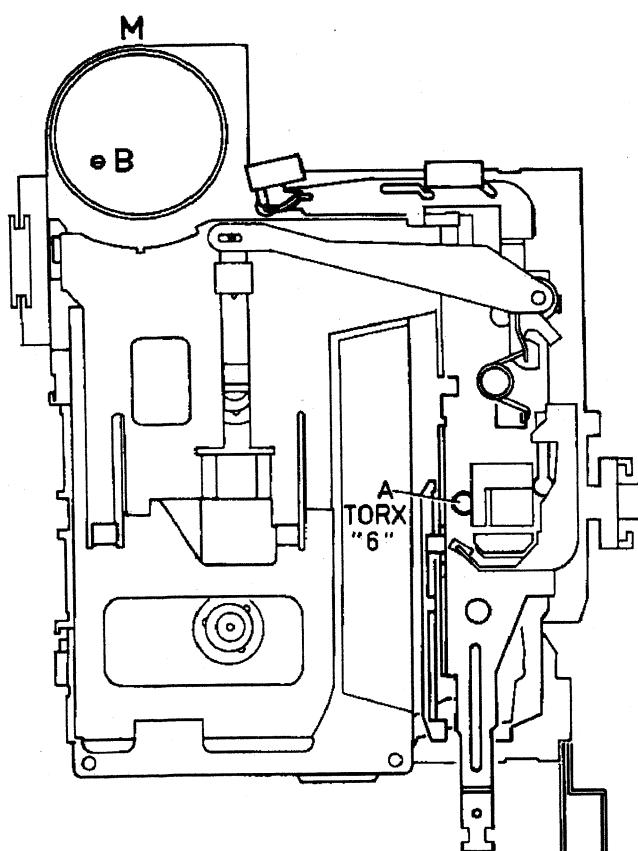


Fig. G

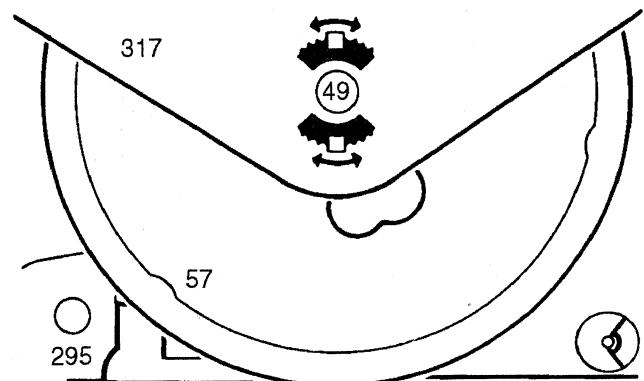


Fig. H

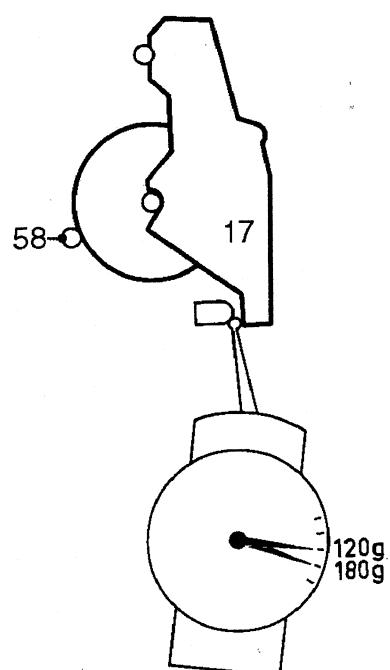


Fig. I

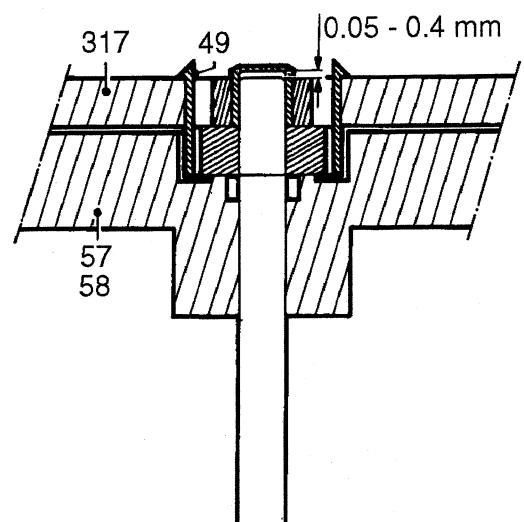
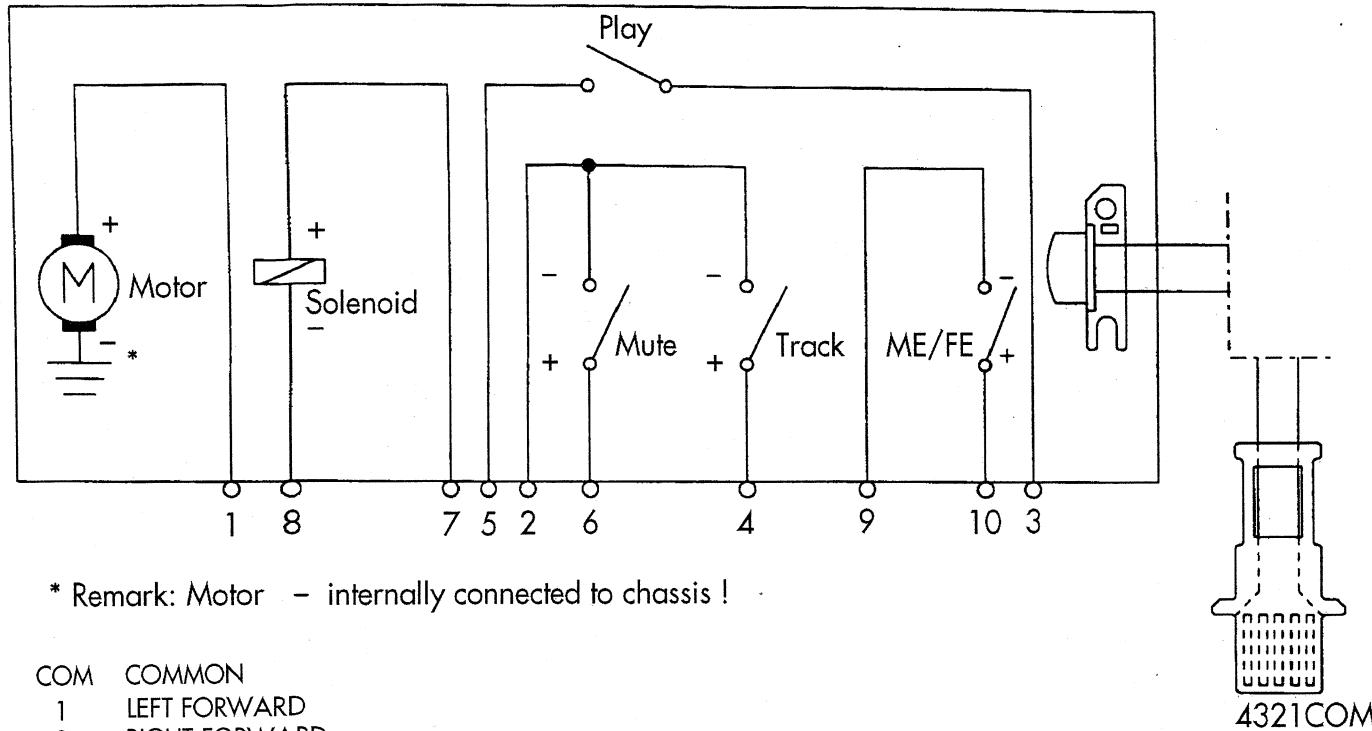


Fig. J

CONNECTIONS



COM COMMON
 1 LEFT FORWARD
 2 RIGHT FORWARD
 3 RIGHT REVERSE
 4 LEFT REVERSE

Fig. K

Fig. N

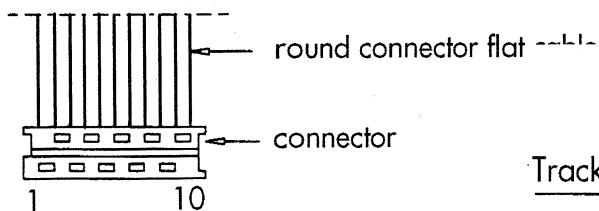
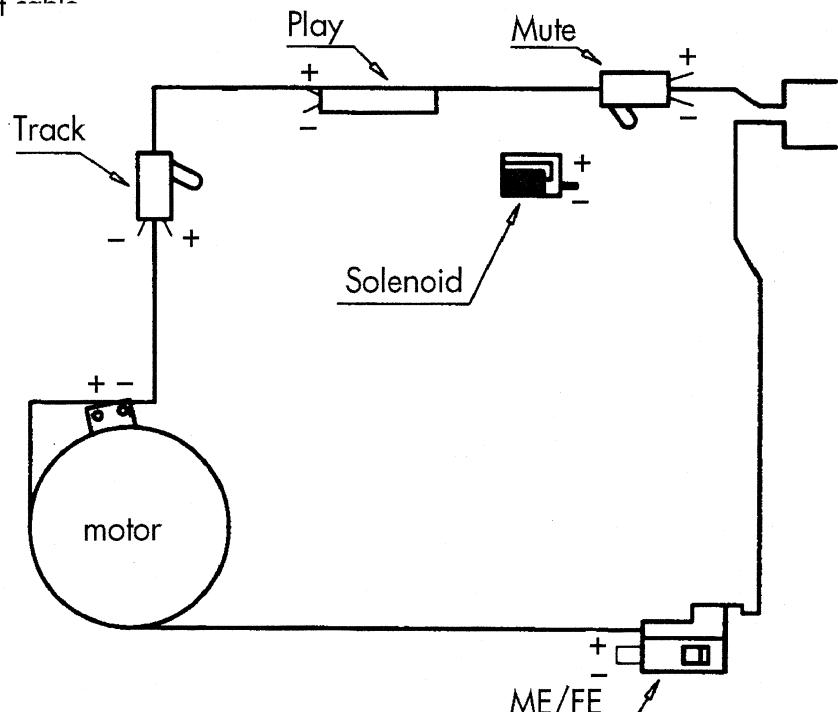


Fig. L

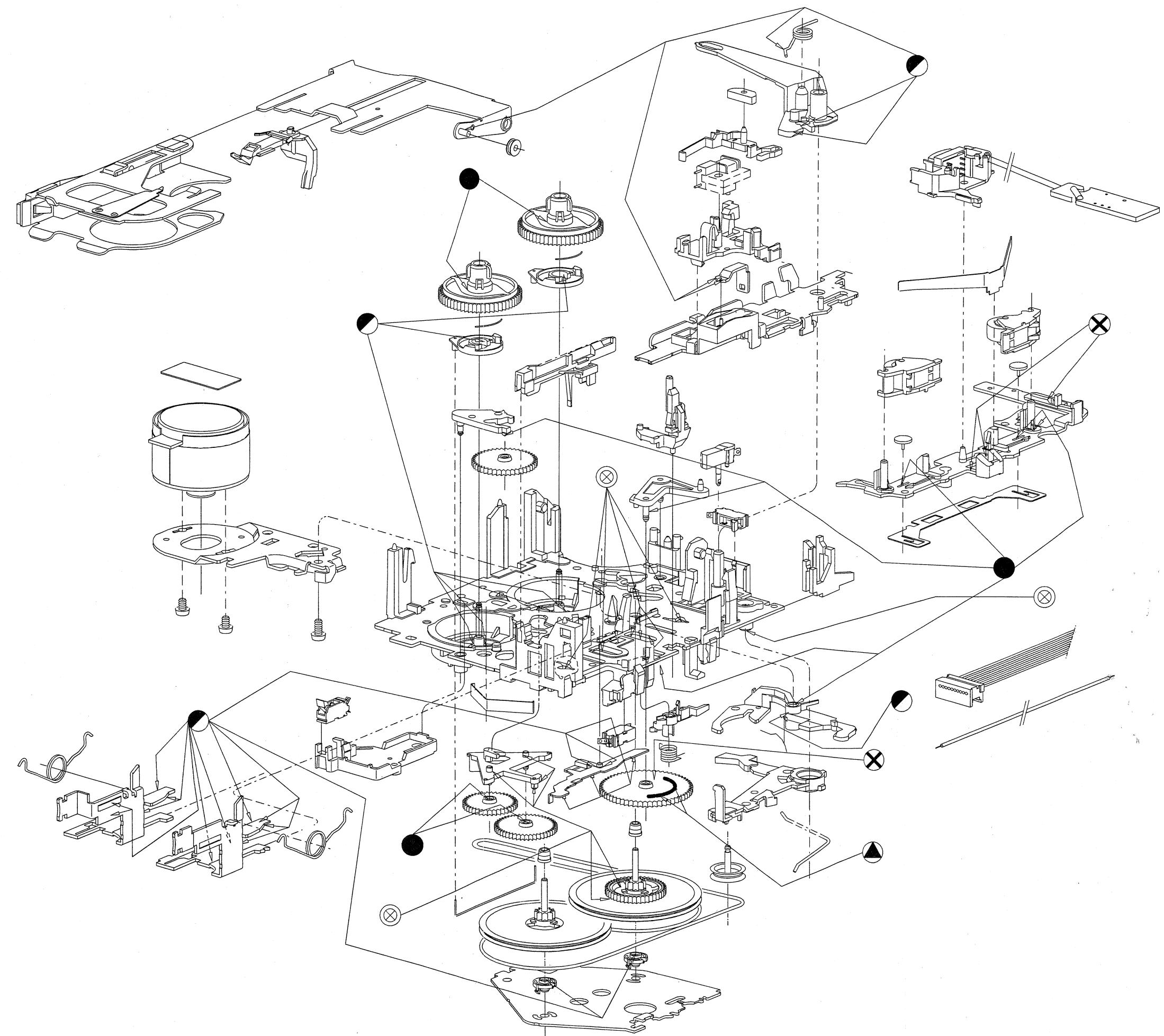


wire	colour	function
1	red	Motor+
2	brown	COMMON
3	orange	+14V
4	yellow	Track SW
5	green	Play SW
6	blue	Mute SW
7	violet	+ Solenoid
8	grey	- Solenoid
9	white	- ME/FE
10	black	+ ME/FE

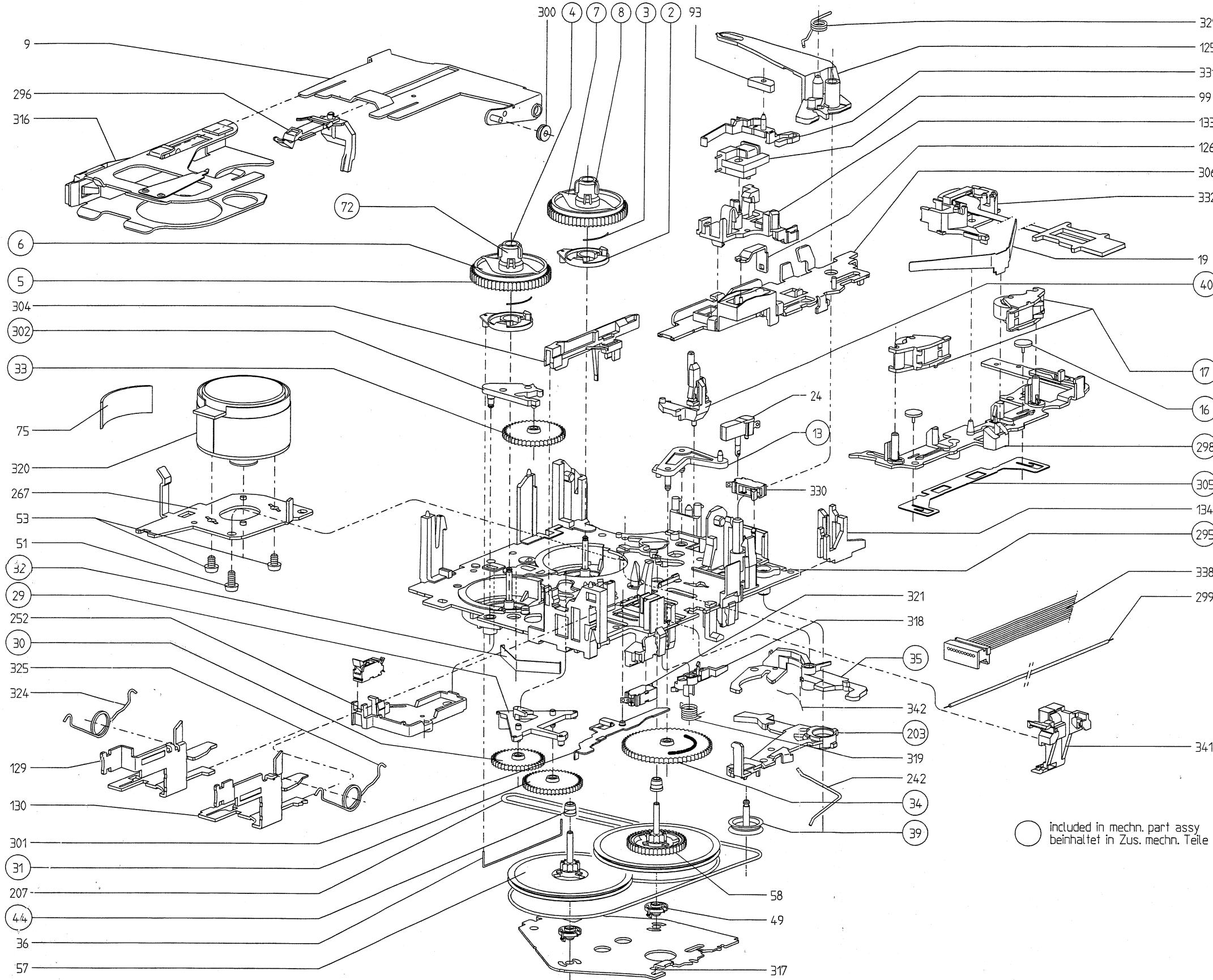
Fig. O

Fig. M

LUBRICATION OVERVIEW



EXPLODED VIEW



PARTS LISTS

2/3	4822 466 70527	Disc assy
4/5/6/7/8	4822 466 70526	Coupling felt assy white
4/5/6/7/72	4822 528 10898	Coupling felt assy black
9	4822 466 81479	Cassette lift
16	4822 528 80983	Fixation
17	4822 403 40157	Pressure roller assy
24	4822 276 13081	Play switch
29/30/31	4822 522 20327	Gear assy
32	4822 492 71468	Leaf spring
35	4822 403 52031	Gear arm
36	4822 492 90076	Lever
39	4822 528 81144	Pulley
40	4822 403 10225	Holder
44	4822 520 30406	Bush bearing
49	4822 520 30407	Excentric
53	4822 502 12548	Special screw
54/207	4822 358 30405	Driving belt
58	4822 528 81517	Fly wheel assy
93	4822 281 60165	Anchor plate
99	4822 281 50113	Solenoid magnet
125	4822 403 71287	Lever eject
126	4822 403 71286	Lever blocking
133	4822 466 83076	Plate solenoid II
203	4822 404 21169	Arm
296	4822 256 92317	Holder cassette
298	4822 403 71282	Head support bracket
304	4822 462 30632	Band conductor
306	4822 403 71283	Push button rod
318	4822 403 71284	Latch
319	4822 492 42774	Spring latch
320	4822 361 21764	Motor MSI-5 CCW
321	4822 276 13617	Switch mute
330	4822 276 13616	Switch track
331	4822 403 71285	Lever solenoid
332	4822 249 30227	Magnetic head
	4822 691 10438	Deck LCA2.4 complete

Lubrication greases/oils

4822 390 10107	Isoflex PDP 65, 30ML
4822 390 20128	Isoflex TOPAS L 30
4822 390 20116	Grease 004, 100G CAN
4822 390 20128	Isoflex TOPAS L 30